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MENTAL DISORDER AND CHILDBIRTH¹

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It is essential in the discussion of this subject to remember that there is no psychiatric clinical entity particularly associated with childbirth. Such forms of mental disorder as do occur are those which may be found in other cases associated with mental stress and anxiety or acute toxæmia. For the purpose of convenience, it is desirable to deal with the puerperium, lactation and pregnancy separately, and in that order.

Psychoses in the Puerperium.

A psychosis more frequently arises during the puerperium than in pregnancy and lactation. It commonly takes the form of a melancholia or, as might be expected, an acute confusional state. Jellett⁽¹⁾ has shown that such cases comprise 5% of all mental disease in women, whereas those which occur in pregnancy represent only 1% or 2% of all cases and those of lactation 3% to 4%. They manifest themselves in about one out of every four or five hundred confinements. There is frequently an inherited neurotic tendency. Jellett inclines to the belief that mania is the commonest form of psychosis; but other observers are not in agreement with this, although Johnstone⁽²⁾ supports him and emphasizes the significance of that warning symptom, persistent insomnia. This, however, is more frequently the precursor of an acute con-

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on July 28, 1938.

fusional condition than a manic episode. It is interesting to note that the other signs given by these authors are also more consistent with confusion. These are disorientation, irritability, hallucinations of the special senses and furring of the tongue. Cannon and Hayes⁽⁵⁾ believe that the confusional state is the most common reaction and depends upon toxins, septic infection of the urinary tract, abscess of the breast, toxæmia of eclampsia, exhaustion and malnutrition.

Attention is drawn by Liebers⁽⁴⁾ to a rare condition which is associated with eclampsia. He refers to this as the puerperal eclamptic psychosis and mentions that it occurs in about 5% to 8% of all eclampsias. He notes that these *post partum* psychoses are severe and often end fatally. The outstanding histological brain findings in the cases reported are hemorrhages, foci of softening, focal atrophy and ischæmic necrobiosis. The symptoms, of course, are characteristically those of a confusional state.

Although opinion seems to favour mental confusion as the most common form of psychosis occurring during the puerperium, an investigation of patients admitted to Broughton Hall⁽⁶⁾ revealed that of 31 women whose symptoms arose in the puerperium, 18 were suffering from depressive states and only two were confused. There were two in manic states, two paraphrenics, and nine with hysterical reactions. However, this cannot be regarded as an accurate cross-section of puerperal mental conditions; for patients in acute confusional states would not be admitted to this hospital because of their inability to cooperate under the voluntary patient system in operation there.

Berkeley, Fairbairn and White⁽⁶⁾ wisely draw attention to the fact that the influence of child bearing should be regarded as one of the many strains which are recognized as being capable of inducing mental illness. They go on to state that any variety of this may occur with the exception of mental deficiency and dementia. They believe that the commonest forms are the confusional and alternating states and *dementia præcox*. I cannot entirely agree with the inclusion of the last; for it is a common experience to find that the majority of schizophrenics are single, and, if married, so sexually maladjusted that they have no children. These authors further remark that the onset during pregnancy is the least favourable, and that during parturition or the puerperium the precipitating cause is nervous exhaustion or septic intoxication or both.

The consensus of opinion, therefore, seems to be that the confusional states are the commonest psychoses of the puerperium, depressive conditions being in numerically close proximity. There remains a wide divergence of views on this subject; even Osler⁽⁷⁾ shows an unusual inaccuracy in the statement that:

During pregnancy, parturition, the puerperium and lactation, delirium and confusion may arise, and these critical episodes may be the starting point of a manic depressive psychosis, *dementia præcox* or even paresis.

The ætiological factors in the development of a puerperal psychosis, whether depressive or confusional, appear to be the absorption of toxins, the exhaustion of parturition, and hereditary or personal predispositions to neuropathic reactions. In connexion with the last, Cannon and Hayes found, as the result of investigation of a series of patients, that: "A neuropathic or psychopathic family history is obtained in nearly half the cases."

No matter what form the mental disorder takes, the toxic element seems to be the predominant one. This is well illustrated in the series of fourteen consecutive cases reported by Parfitt.⁽⁸⁾ Of these, eleven were puerperal and three occurred during pregnancy. Albuminuria was present in thirteen and in two it was severe. Subinvolution was found in eight. Two patients died from puerperal septicæmia. There were cardiac complications in ten, with a systolic blood pressure reading varying from 130 to 190 millimetres of mercury. Anæmia was common, and a dry tongue and constipation were frequently present. The average time of certification was on the ninth day. The percentage of recoveries was found to be high, and Parfitt considered that one should not give up hope even in the most severe case. This optimism is not shared by other observers who consider that the favourable prognosis so frequently given is not justified.

An interesting theory has been advanced by Graves⁽⁹⁾ to explain the development of puerperal insanity. He suggests that:

Cervicitis and puerperal sepsis, usually more pronounced in the parous woman and especially in cases of recent puerperal psychosis, is induced by sinus toxæmia.

He then goes on to show the incidence of frontal sinusitis and allied conditions in mental disorders generally. Such a view brings us perilously close to that of Cotton,⁽¹⁰⁾ who drained antra, excised appendices, removed gall-bladders, extracted teeth, irrigated colons and amputated cervixes in an endeavour to eradicate focal sepsis. The sadly eviscerated woman was then returned to the bosom of her family, reputedly cured.

It seems that ordinary attention to puerperal sepsis is all that is required by way of obstetrical treatment; the rest lies in the hands of the psychiatrist, if our assumption of an inherent predisposition is correct.

The above remarks apply to the psychoses of the puerperium; but it must be borne in mind that neurotic signs may be manifested by those women who have a predisposition in that direction and may be made the excuse for escape from the stresses and strains of further pregnancies. In the Broughton Hall series there were nine such cases.

It is difficult to collect a satisfactory series of cases to illustrate the psychoses which may arise during this period, because of their relative infrequency.

One that is of interest is that of a woman who developed a puerperal mania after each of eight successive pregnancies and was certified as insane on every occasion, spent some time in a mental hospital and eventually

returned home, apparently quite well, to wait her next attack. The end of the reproductive period was apparently the only thing which brought to an end her annual pilgrimage to an institution. The children which she bore have been normal, as far as is known, so that she cannot be used as a eugenic argument in favour of contraception, sterilization or termination of pregnancy.

A group of eight successive patients suffering from puerperal psychoses admitted to the Reception House, Darlinghurst, in a period of three months, consisted of one in a manic state, five in confusional states, one with paraphrenia and one with a manic depressive psychosis. Only a small series is selected because it happens that they represent quite accurately the points which have previously been emphasized. The following is a typical case.

CASE I.—The patient, aged thirty-three years, developed pneumonia which resulted in the birth of a premature child. During the puerperium she became very restless, incoherent and confused, and her husband was advised to take her to the Reception House. He refused to do this and took her home from hospital. Her condition, mentally and physically, gradually deteriorated. Eventually she came under observation, when she was found to have a temperature of 37.8° C. (100° F.) and was resistive and completely out of touch with her environment. Her condition was serious, she was very weak, faulty in habits, and quite incapable of looking after herself in any respect. She gradually improved both mentally and physically and was eventually discharged.

The toxic factor was very evident in this case. It is not usual for recovery to take place so rapidly, and one can only assume that this was a true toxic state and depended on a low-grade infection, the elimination of which resulted in immediate improvement.

A case of acute confusion in which the outlook was less favourable is the next.

CASE II.—A girl, aged eighteen years, was admitted to hospital with the history that she had become restless and uncontrollable following the birth of a baby two days before. When seen she was confused, noisy, foolish and irresponsible. She obviously had no appreciation of her position and condition. Her temperature was 38.3° C. (101° F.) and she looked toxicemic and exhausted. She remained in this state, showing no improvement whatever in her condition, and eventually had to be certified as insane.

Here we have the characteristic symptom complex of the toxic confusion shown very well. The prognosis appeared to be unfavourable as far as early recovery was concerned; but removal of the cause and attention to the physical condition offered reasonable prospects of an eventual return to the normal.

The patient who had paranoid symptoms was of interest for several reasons.

CASE III.—A woman, aged twenty-six years, began to develop delusions of persecution shortly after the birth of her fourth child. On admission she had a fully fledged psychosis. She complained that her neighbours did things to annoy her, passed abusive remarks about her and her children and filled her house with dust and ashes. The baby at this time was eight months old, but the symptoms dated back to the puerperium. She had been certified as insane on two previous occasions, on the first of which her symptoms were those of a confusional state and developed four months after the birth of a child, and on the second were of a manic nature and followed a miscarriage.

This indicates the impossibility of predicting what form of mental disorder will reveal itself during the course of subsequent puerperia of a patient who has previously had a psychosis; for here there have been three different types in the one person. It augurs ill for further pregnancies.

Many women never have another illness, and one can safely say that it is the exception rather than the rule for succeeding pregnancies to be attended by a psychosis. Although this is the case, another of our series had a history of a previous breakdown, but again of a different type.

CASE IV.—A woman, aged thirty-two years, was received in an acutely depressed and miserable condition, with ideas of a self-depreciatory and hopeless nature. She had given birth to a child eight weeks before, the symptoms following immediately after. She had been certified as insane eight years previously, again eight weeks after parturition. On the former occasion she had been very confused, aimless and restless. In the interval between attacks a child had been born without any untoward effect on the mother.

This is the only depressive psychosis in the series and in this there had been a period of confusion with a previous childbirth. This once again reveals how difficult it is to express an opinion about future pregnancies.

The next case is the only pure mania in the group, and here also it happens to be the end result of a series of previous episodes, dating back to adolescence. The psychopathic tendency was very obvious in this instance long before pregnancy.

CASE V.—The patient, at the time of her last admission to hospital, was thirty-six years of age. She had previously been certified at the ages of sixteen and eighteen years respectively. On both these occasions she was restless, noisy and irresponsible and had threatened suicide, apparently without any real intention of carrying out her threat. Her condition was one of mania. She subsequently married in spite of this bad history and had six children. After the birth of each of the first five she had a period of restlessness and excitement, but subsequently settled down without the necessity of institutional treatment. On the last occasion, however, she became quite unmanageable, and six weeks after childbirth had to be removed to the Reception House. After a few days there she became a little quieter and her relatives insisted on taking her home, but promptly returned her again after she had indulged in a little window smashing and furniture destruction as an expression of her exuberance. She was subsequently transferred to a mental hospital.

Although the above-described group of cases is a small one, it serves its purpose in demonstrating the preponderance of confusional states and is interesting in that it draws attention to the possibility of recurrences of similar attacks on one predisposed by a psychotic illness during adolescence, when pregnancy is not a factor. If the ordinary strain of this period is sufficient to produce a psychosis, how much more likely is it to occur with the greater stresses, mental and physical, of childbirth?

I have dealt with the psychoses of the puerperium in some detail, but must not overlook those psychoneuroses which may attack a woman who seeks an escape from further discomfort because of her

inability to adjust herself to any adversity. Many women who date their invalidism from the puerperium do so as a defence against this discomfort. In a series of 136 cases of hysteria at Broughton Hall the puerperium was regarded as the aetiological factor in only five. It does not, therefore, play a very large part; but the possibility should be kept in mind.

Another aspect, and an important one, is the aversion which often arises at this period for husband and child. This may be, and often is, present in a large number of cases without reaching a psychotic degree; but in other instances it may be of such a morbid nature as to lead to homicidal impulses, particularly directed towards the baby. Again, it may merely represent an instinctive defence against an early resumption of marital relations and the possibility of another pregnancy. It may also have an anthropological significance and be a relic of the times when a woman was held to be taboo for a varying time after childbirth and regarded herself as unclean. An example of this aversion is the case described below.

CASE VI.—The patient, aged twenty-six years, had an uneventful pregnancy and parturition. In the early days of the puerperium she appeared perfectly normal, but was rather worried by the behaviour of a maid who was obviously psychotic and eventually had to be dismissed. The patient then insisted on getting up and managing her household affairs. The husband, not realizing her weakness, regarded this as evidence of recovery and began to discuss his earnest desire for a large family. This suggestion, coming at a time when she had considerable anxiety, produced an aversion towards her husband, associated with obsessive homicidal thoughts about the child. All this worried her still more and aggravated her condition. Eventually she sought treatment, and when the defensive nature of her reaction was explained to her, she readily accepted this and rapidly became well. She was saved from a more serious condition by her prompt recognition of the danger of her attitude.

All cases do not end as happily as this. In too many instances the impulses persist and may pass beyond control, resulting in the death of the child, a suicidal attempt, or both. No doubt many cases of infanticide are due to an impulse over which the patient has no control because she is suffering from a depressive state or is quite unaware of her actions as a result of mental confusion. This is particularly likely to happen if she is left unattended, or if, for various reasons, such as shame or a desire for secrecy, the child is born in an isolated place.

Even under the best conditions such impulses may arise. The premonitory symptoms are foolish dislikes of those around her, failure to display a normal interest in the child, restlessness and incoherence. In about 40% of such cases a suicidal tendency is present and the risks to the child are equally great. We have here the dangerous combination of an intense mental disturbance, a great motor perturbation and an organic state of extreme exhaustion.

It is well to remember these possibilities in cases which never become so bad that they can be regarded as psychoses.

Psychoses Occurring During Lactation.

Mental disorder is not common during lactation and seems to occur most frequently among the poorer classes where lactation is prolonged and often associated with hard work, insufficient nourishment and multiparity. The exhaustion factor is the predominant one and the reaction is usually of a depressive type with self-depreciatory ideas, feelings of unworthiness, and delusions, commonly of persecution. The prognosis is considered to be uniformly favourable, the condition responding to rest, adequate nourishment and the cessation of suckling.

Psychoses Occurring During Pregnancy.

Although the psychoses of pregnancy comprise only a very small percentage of the total affecting women, it is frequently a fertile source of neurotic manifestations, for various reasons. It is stated that *primiparae* over thirty years of age are particularly subject to this form of illness. Among the more potent psychological factors may be mentioned illegitimacy, desertion or death of the husband and a history of previous mental disturbances.

Pregnancy, indirectly, may give rise to a variety of conditions. For example, the fear of what should be a natural physiological process, engendered by reports of the maternal death rate, may result in an hysterical reaction. Pregnancy may be a period of mental stress to a perfectly healthy woman to whom its associated pain and danger make it an ordeal. It is even more so to one who is psychologically unstable. The presence of bodily disease and toxæmia increases the danger of the development of psychopathic symptoms; for toxæmia alone is sufficient for this. The neurotic diathesis is frequently present.

All authorities are agreed that revulsion to husband and child is a common feature of this form of mental disorder. The patient becomes very suspicious, depressed and jealous, and suicidal tendencies are often evident. Buzzard⁽¹¹⁾ states that:

Under favourable circumstances the large majority of these patients recover, and the prognosis is generally regarded as more favourable the earlier the onset of symptoms after conception.

This view is shared by most other writers on the subject, although Bamford⁽¹²⁾ believes that such optimism is not entirely justified. This author reports a series of 97 cases in which only 34 patients recovered. Nine patients were relieved, 33 died and 21 remained in hospital. It is interesting to note that puerperal sepsis occurred in four cases only because of the constant care and attention the patients received in the institution. There was very little evidence of exhaustion or intoxication in this series. These cases did not accurately represent conditions which arise during pregnancy, for in 60% there was some associated mental disability or predisposition before the onset of gestation. This is well demonstrated by an analysis of the cases in

which recovery did not occur. There were twelve mental defectives, thirteen epileptics, seven with *dementia paralytica*, twelve with schizophrenia, eleven with manic depressive psychoses, two with delusional psychoses and two with alcoholic dementia. From this we can reasonably assume that at least 34 of these patients had a psychosis prior to pregnancy. It is possible, of course, that the strains of pregnancy aggravated the preexisting condition. In no case was the pregnancy terminated.

The psychological factors in the development of mental disorder during pregnancy are intemperance, unemployment, neglect, privation, seduction, bereavement and marital unhappiness and infidelity. The physical causes fall into two groups: the nervous, which includes bodily discomfort, reflex irritation and increased irritability of the nerve centres; and the hæmic, in which there are altered conditions of the blood.

From the above it may be concluded that there are, as in the puerperium, two principal forms of mental disorder, the melancholic and the confusional. The former depends largely on the anxiety and stresses of pregnancy and the latter on the toxæmias which may be present.

Of the depressive states, Kraepelin⁽¹²⁾ notes that among 38 cases occurring during confinement, similar attacks appeared 25 times.

The toxæmias of pregnancy, of whatever type, give rise to the confusional psychosis, with restlessness, excitement, delirium and hallucinations of the special senses. An example of a profound toxic condition is the case described as follows:

CASE VII.—A woman, aged twenty-nine years, developed an acute confusional state in the eighth month of pregnancy. This was associated with albuminuria and massive œdema of the legs and vulva. She was extremely restless, resistive and noisy, and had vivid visual hallucinations. She continually threw herself on the floor of her room. A premature and precipitate labour resulted. The baby subsequently died; but the patient recovered in a few weeks after the toxic condition had been satisfactorily dealt with.

While I am on the subject of toxæmia it is worth mentioning that Henderson and Gillespie⁽¹⁴⁾ have drawn attention to the occurrence of Korsakow's psychosis in the toxic vomiting of pregnancy. This is admittedly extremely rare; but it must be differentiated from that due to alcohol or some other poison in that order that the correct prognosis may be given.

Another example of toxæmia which did not end so fortunately was the next case to be described.

CASE VIII.—A girl, aged eighteen years, became very confused, restless and excited when well advanced in pregnancy. Her mental condition became progressively worse. She was quite uncontrollable, threw herself about and was incapable of any cooperation. Her mother, by the way, regarded this illegitimate pregnancy with unnatural complacency and displayed no interest in her welfare. The patient exhibited all the signs of an acute confusional psychosis of toxic origin. She rapidly deteriorated, both mentally and physically. She became jaundiced, but because of her violence could not be examined, and died in a few days. At autopsy acute yellow atrophy of the liver was found.

There is little to be said about this case, as the symptoms were characteristic of the confusion one might expect and the termination was not unforeseen.

As pregnancy is a state during which the entire body must be adjusted to new conditions, there is probably not an organ in the system which does not make some change suitable to the new status imposed. The brain, the spinal cord and the peripheral nerves must also participate in this, and occasionally their attempts at adaptation fail, with resulting manifestation of disease. These may take many forms, as pointed out by Alpers and Palmer,⁽¹⁵⁾ and include hemiplegia, aphasia, encephalitis, chorea and visual disturbances, such as optic atrophy and ocular palsies. Myelitis and hæmatomyelia have also been found.

The psychoses of pregnancy usually develop after the fourth month, the commonest period being about mid-gestation. As mentioned before, it is commonly accepted that the later the development the more unfavourable the outlook. Termination of pregnancy does not influence the prognosis in any way. It is considered that pregnancy should always be allowed to run its normal course. This attitude is supported by Frumkes,⁽¹⁶⁾ who emphasizes the fact that the psychoses of pregnancy must be regarded as differing in no way from ordinary mental disorders.

Apart from the more serious psychiatric conditions there are various neurotic manifestations which may reveal themselves. Any woman, after conception, may develop sundry alterations in her emotional outlook, her appetites and her instincts. During the period of morning sickness some anxiety and associated insomnia are not uncommon and cannot really be regarded as pathological. In the Broughton Hall series hysteria appeared during pregnancy in fourteen cases, and in six others it was advanced as the original cause of the present condition. This brings us to another aspect of the subject, namely, the conditions which may arise after pregnancy, but depend on the psychological effects of this for their origin. A typical example of this is the following.

CASE IX.—A girl, aged nineteen years, was admitted to hospital in a highly emotional state, with a history of persistent vomiting and of seizures, both obviously of a functional nature. The seizures dated from a pregnancy three years previously. This had been the result of an incestuous relationship with her father, who had overcome her resistance with threats. These fits represented a rejection of a distasteful situation. The vomiting developed when she met a man to whom she became attached; but to whom she was too ashamed to tell her history. The vomiting, which closely resembled the morning sickness of pregnancy, indicated the association between her mental conflict and her unpleasant experience. It obviously represented the disgust connected with her unfortunate incident.

In this case the psychoneurosis undoubtedly owed its origin to pregnancy, although it did not reveal itself during this period. Similarly in other instances a train of events may be set in motion which will end in a well-developed neurosis long

after childbirth. Some trivial incident or trifling sensation of discomfort may be seized upon to justify a persistent hypochondriasis.

Neurotic symptoms may arise during pregnancy and be based on physical or psychological factors. Included among the former are physical malaise, toxic elements, metabolic changes and general disturbance of function, which the patient with a neuropathic tendency is unable to cope with satisfactorily. The psychological factors are fear, stimulated by the alarming comments of friends, shame in the case of an illegitimate pregnancy, and marital unhappiness. An example of worry and mental stress caused by a domestic situation and producing a severe anxiety hysteria with tragic results is the one now quoted.

CASE X.—A woman, aged twenty-three years, was married to a man who lost his position soon after marriage. The couple then took up residence with a wealthy but exacting and domineering grandmother. Incidentally, she did not approve of the patient's choice of husband. The wife, as might be expected, had a very trying time, suffered a great deal of anxiety in attempting to make the best of a very difficult position, and towards the end of pregnancy became very emotional and tremulous. Shortly after the birth of her child she jumped from a balcony to the ground, killing the baby and injuring herself. She passed through a phase in which she exhibited typical anxiety symptoms, but eventually made a complete recovery. There was an amnesia for the whole incident. A subsequent pregnancy under more satisfactory conditions was perfectly normal in all respects.

In this case the symptoms definitely showed themselves before parturition and reached their climax in the early days of the puerperium. Their dependence on the domestic problem is shown by the successful second pregnancy when this had been solved.

The element of anxiety may be present also in elderly *primiparae*, to whom the birth of a living child may be very important, when they are nearing the end of the period of reproductive usefulness. The same applies to *multiparae* who have had a succession of miscarriages. Morning sickness and exhaustion from metabolic disturbances may result in neurasthenia or other neuroses. Hall and Mohr⁽¹⁷⁾ made an investigation of the prenatal attitudes of a large number of *primiparae* and found that these were influenced by various fears, such as that the child would be rejected because the patient herself was deserted by her mother or because her marriage was a "forced" one or because she had married her cousin. Mental conflicts also arose where the patient was not married in a church or worried about the effects of contraceptives on sanity or knew of relatives who had died at childbirth. Some immature mothers broke down because they were unable to accept the responsibility of maternity, and such persons may make the hardships of poverty an excuse for rejecting the marriage itself or the baby to come. Any of these factors may result in a neurotic condition during pregnancy.

Not only pregnancy but its abrupt termination may have far-reaching effects on the mind of a woman. Miscarriages, accidental or induced,

because of the patient's earnest desire for a child or because of her religious convictions, may result in a depressive or anxiety state from disappointment or self-reproach as the case may be.

Before advising against further pregnancies in any given case one must bear in mind certain considerations. It is important to determine whether or not there may have been some physical or psychological factor on the previous occasion which could be eliminated or guarded against in the future, the outcome thus becoming more favourable. One must decide if it might not be better in the patient's own interests to have another child if she earnestly desires it rather than to frustrate her and make her feel inferior to other women by refusing to sanction this. With proper care the risks to mother and child can be greatly minimized. The fear of transmitting some psychopathic taint from parent to offspring is unfounded. The result of ill-advised interference with pregnancy is shown in the case described below.

CASE XI.—A woman, aged thirty-two years, had an earnest desire for another child. She had had three previous children, all of whom were normal and healthy. She felt that the interest and the care needed for a baby would help her during the monotony of her husband's frequent absences from home. The children were of school age and away all day. She was encouraged to bring her wish to fruition. After the birth of the last child, some seven years before, she developed a puerperal melancholia and eventually had to be certified as insane, spending several months in hospital, but recovering completely in the long run. At about the fifth month of pregnancy she consulted a medical man, who, having in mind her previous mental history, became alarmed and advised evacuation of the uterus. On his insistence, this was done. She thereupon became very miserable and depressed from remorse for her action, as she was strict in her religious observances, and because of the failure of a cherished ambition. A severe melancholia followed as a natural consequence. Thus the very thing it was hoped to avoid was precipitated.

Finally, we come to a consideration of the influence of pregnancy on a preexisting mental disorder. As might be expected, the mental stress of this and the drain on the system generally by toxic influences frequently prove too great for the psychotic patient and often result in an exacerbation of the symptoms. *Dementia paralytica* may be greatly accelerated, schizophrenia more exaggerated and melancholia aggravated by it. About the only mental state which does not respond with a regressive phase is mental deficiency in which equanimity may be phenomenal and smug self-satisfaction most evident. The inferior personality has at last achieved something.

Opinions vary with regard to the influence of pregnancy on epilepsy. Brain⁽¹⁸⁾ expresses the general attitude when he says:

There is no evidence that marriage effects the tendency to fits either beneficially or adversely, though pregnancy may prove either beneficial or the reverse. It is not uncommon for an epileptic woman to be free from attacks during pregnancy or even to be free when she is pregnant with children of one sex but not with the other. Others, again, are worse when pregnant.

If we accept the theory that the convulsion is of toxic origin or is the result of a physico-

chemical disturbance, it can readily be appreciated that the increase of these factors during pregnancy may lead to an increase in the number of fits. In some cases epilepsy dates from childbirth and that was so in Case XII.

CASE XII.—A woman, aged twenty-five years, a few days after the birth of twins, had a major convulsive seizure. This was followed by subsequent seizures at irregular intervals and usually nocturnal in type. After five years the attacks became more frequent and severe and occurred during the day as well. She sought treatment for her condition. Now she has not had a major attack for six years; but during this period has had very numerous minor attacks, with automatism. There was no family history of epilepsy and it appears that the metabolic strain of the double pregnancy precipitated a condition which might not otherwise have revealed itself for years, if at all.

From what has been said it must be clear that the termination of pregnancy is not justified in any instance, as nothing is to be gained, either mentally or physically, by this procedure. Nor is one entitled to advise against future conception unless the patient is mentally defective, a taint which is transmissible, or has had some form of mental disorder during two or more pregnancies. This also applies to extramarital conception, in spite of the psychological effect that shame and anxiety may have on the mother.

Admittedly pregnancy resulting from rape or incest, in the case of a child, may do untold psychological damage because of the disgrace and the disgust which every succeeding month will bring into only greater prominence, and which will serve to remind her of what must have been a terrifying and revolting experience. In addition, at parturition, there may be a very severe conflict between the normal maternal attitude and one of revulsion to the child for all it represents. This may lead to a serious mental disorder. Whether pregnancy should be brought to an abrupt end in such circumstances is a question for the individual conscience, but certainly not one for public ventilation.

Conclusions.

1. There is no typical psychosis associated with childbirth.
2. The frequency of mental disorders is greatest in the puerperium. States of confusion or depression are the usual form it takes.
3. Toxæmia and exhaustion play a large part in all cases. Suicide and infanticide must always be guarded against when symptoms arise.
4. Pregnancy should not be terminated under any circumstances. Such action does not result in any improvement and may, in fact, only serve to aggravate matters.
5. Preexisting mental states may be adversely affected by conception.
6. The stresses of pregnancy may be seized upon by the neurotic woman as an excuse for a "flight into illness".
7. The prognosis in the mental disorders of childbirth is not as favourable as was formerly thought.

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MENTAL AND NERVOUS DISEASES ASSOCIATED WITH CHILDBIRTH.¹

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It is well recognized that child bearing exerts a considerable strain on the psychic make-up of a woman, and almost uniformly leads to alterations of personality which are easily recognized by her family and friends.

The average normal woman withstands this strain without showing any serious symptoms, but in the presence of an underlying psychic imbalance, the reaction may assume the form of a pronounced neurosis or, in extreme cases, of a psychosis.

PSYCHOSES.

It has been estimated that a true psychosis develops once in every 600 to 1,000 pregnancies, occurring more frequently in women over twenty-five years of age and in those who have previously borne children. Approximately 3% or 4% of all admissions to psychopathic hospitals represent psychoses which have made their appearance during pregnancy or shortly after delivery. It can thus be seen that child bearing is responsible for a relatively high percentage of all psychoses developing during the child-bearing years.

Except in the toxic group the obstetrical experience probably acts only as a precipitating factor to hasten the appearance of a mental derangement, which would inevitably have appeared at some period of life under unusual stress.

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on July 22, 1938.

In the other and smaller group a toxic factor represented by a toxæmia of pregnancy or by an infection brings to light a weakness which might otherwise have escaped recognition.

Psychoses incident to child bearing may appear during pregnancy (gestational psychoses) or during the several months following delivery (puerperal psychoses).

The puerperal group is by far the larger and is represented almost entirely by psychoses of functional origin, although occasionally a disturbance of the organic variety may follow *post partum* eclampsia or a severe puerperal sepsis, while the pregnancy psychoses are more likely to have an organic origin.

The usual forms of psychic disturbance are noted in the functional group, such as *dementia præcox*, paranoid psychosis and manic depressive psychosis, whilst among the toxic cases delirium may occur, or a true degenerative psychosis may be precipitated by physical or toxic trauma in those who are constitutionally susceptible to such influences.

In the functional disorders incident to pregnancy the prognosis is generally better than in similar disturbances precipitated by some other psychic factor, except in *dementia præcox*, in which there is considerable likelihood that the condition will become permanent. The psychosis may persist only a few days, but may last months or years.

Toxic delirium is usually of short duration; but the degenerative psychosis of toxic origin is frequently persistent and progressive, as may be expected from the fact that it represents an outbreak in a constitutionally mentally inferior individual.

Since it is well recognized that the majority of psychoses developing in late life, particularly the functional psychoses, are dependent upon hereditary factors or those concerning the patient's early environment, potential psychotics should be advised not to marry, and especially not to have children. The parents share an equal responsibility, and a mentally unstable man or woman uniting with a normal partner may transmit the instability to any offspring. There is no evidence that psychotic women have a reduced fertility.

A preexisting psychosis is usually aggravated by pregnancy, more frequently permanently, but sometimes only temporarily. In rare cases, and especially in *dementia præcox*, the condition may be relieved temporarily during gestation only to relapse or to be aggravated after delivery.⁽¹⁾

NEURITIS.

Attention has recently been directed to a severe and frequently fatal form of polyneuritis which accompanies or follows *hyperemesis gravidarum*. In many instances the vomiting has been apparently of the neurotic type, that is, it was controlled by rest, sedatives and dietary regulation before the neuritic symptoms became manifest. The condition may appear as early as 12 or 14 weeks after the

last menstrual period, but more commonly develops during the fourth or fifth month of pregnancy. The first symptom is generally an increasing weakness, especially of the leg muscles, which may or may not be associated with sensory disturbances in the affected parts. As the neuritis progresses the deep reflexes are at first somewhat accentuated, but rapidly weaken, and finally disappear. Following degeneration of the motor nerves the muscles become soft and flabby, and voluntary motion is completely lost or greatly reduced. In the extremities the extensors suffer more than the flexors. The lower extremities are more commonly affected than the upper.

The distribution is not typical of a peripheral neuritis in that the feet and hands may be affected only late in the disease. Sensory disturbances vary greatly, being almost absent in some cases and causing great discomfort in others. Involvement of the vagus frequently leads to a persistent tachycardia, which is unaffected by atropine; more rarely, half of the diaphragm is paralysed.

Affection of the oculomotor nerves frequently results in diplopia, which is usually of short duration, or in nystagmus. When the disease involves the bulbar nerves, early death results from paralysis of the muscles concerned with swallowing and respiration. Sometimes the progress of the paralysis to vital centres is so rapid that some doubt may exist concerning the nature of the affection, although the history of previous pernicious vomiting and of gradually developing general weakness, associated with tachycardia, nystagmus, loss of deep reflexes, and sensory evidence of neuritis, will be sufficient to establish the diagnosis.

Laboratory examinations reveal nothing unusual. The urine and blood are normal; there is no hypertension or oedema, while the spinal fluid is usually under no increased pressure.

The prognosis is bad. Sometimes death has been attributed to toxic vomiting of the chronic variety, by reason of a lack of knowledge of the essential clinical picture of polyneuritis.

The association with vomiting suggests that the two diseases are related; but there is little doubt that polyneuritis is a definite disease, which probably represents one, but not the only, sequel of hyperemesis which may prove fatal.

When the bulbar centres are not extensively involved, the disease runs a chronic course, with the final outcome depending on the severity of the peripheral involvement.

The nystagmus, diplopia and tachycardia usually disappear before there is much improvement in the peripheral phenomena, and paralysis and sensory disturbances may persist for months, during which time the hope of ultimate recovery is good, but by no means certain.

Treatment.

The treatment of patients suffering from this type of polyneuritis is mostly symptomatic. Therapeutic abortion has been carried out with the hope that

progress of the disease may be halted; but in some instances a wider nerve involvement develops. In the severe, rapidly progressive cases abortion seems only to hasten the fatal outcome.

Relief from neuralgic pains is often demanded, and heat, gentle massage and mild analgesics are useful; but it is not advisable to use morphine. Attention should be given to the prevention of muscular contractions, which may develop as an indirect result of the pain produced by extension of the extremities. Massage and electrical stimulation of the muscles may be useful late in the disease.

As the neuritis is similar to that observed in beriberi and pellagra, vitamin B in large quantities may be useful. As the neuritis tends to recur in subsequent pregnancies, pregnancy should be avoided.

Occasionally neuritis appears in a single nerve or in one extremity, unassociated with the other clinical features of the polyneuritis described above. Whether such an involvement represents a minor form of polyneuritis or has a separate aetiology is unknown; but since these localized disturbances can occur at any time in pregnancy or after delivery and are often associated with infective processes, it may be assumed that they are separate. The condition is usually transient and involves no permanent alteration of function. Sciatica in pregnancy is usually due to sacro-iliac relaxation, producing tension on the nerves of the sacral plexus; relief can be provided by proper support to the lower part of the back.

CHOREA GRAVIDARUM.

Pregnancy may occur in women who have previously had chorea, and may aggravate a new attack. In other cases chorea first appears during gestation or after delivery, when it seems to be due directly to the pregnancy.

Many patients present a history of chorea or rheumatism in earlier life, and show evidence of a definite endocarditis during the course of the disease; whereas others have no cardiac involvement and nothing to suggest a preceding streptococcal infection. In these latter instances it has been suggested that the disease may be due to the action of a hypothetic pregnancy toxin on a nervous system weakened by constitutional defect or by previous disease and further weakened by pregnancy itself.

The disease is rare and is more likely to make its appearance in the first half of gestation. Younger women are more prone to the disease, so it occurs more frequently among *primiparae*. Antecedent chorea and rheumatic fever are predisposing factors.

The milder form of the disease may begin with an increasing awkwardness and with mental changes, such as irritability, melancholy, headache and dizziness. Definite choreiform movements soon appear and may involve only certain groups of muscles, but more commonly spread to the whole body. The twitchings tend to disappear or to be reduced during sleep.

The more severe form of *chorea gravidarum* begins suddenly, following a precipitating factor, such as mental shock or fear. The choreic movements may be so violent as to interfere with feeding and with sleep, and delusions, delirium and mania may appear. The pulse tends to be rapid; slight fever may develop in the most severe cases. Tachycardia and fever are of bad prognostic import. The mortality rate varies from 15% to 20%, death usually being due to cardiac or psychic complications. *Post mortem* examination reveals old or recent lesions of the heart valves in about two-thirds of the cases, whereas in the remainder no such alteration is observed, which lends strength to the argument that certain cases may be toxic rather than infectious in origin.

When recovery occurs, the heart may show no signs of valvular disease; but sometimes murmurs may have developed. It seems that recurrences are infrequent in subsequent pregnancies. The foetal mortality rate is high, on account of the occurrence of spontaneous abortion and premature labour during the height of the attack. The possibility of transmission of the disease to the foetus has been pointed out by Barnes, who saw a new-born child with the writhing movements of chorea.

Treatment.

Hypnotic drugs, such as "Luminal" in a dose of 0.09 gramme (a grain and a half) every four hours, should be given. Care should be taken to keep up the patient's general strength. Injury to the patient, such as by falling from the bed during violent general movements, should be prevented. There is considerable doubt whether therapeutic abortion is ever beneficial, as in mild cases it is unnecessary and in severe cases useless.

EPILEPSY.

Pregnancy frequently occurs in epileptic women, and more rarely epilepsy first manifests itself during gestation. In the former instance the severity of the epilepsy, as judged by the character and frequency of the seizures, is usually unaffected; but it may be increased or diminished in certain cases. When improvement is noted during gestation it ordinarily persists for only a short time after delivery. Changes towards greater severity are, however, more common and may induce a *status epilepticus* or a serial epilepsy in what was formerly a case of *petit mal*.

When epilepsy appears first during pregnancy it must be differentiated from the convulsive toxæmias. Correct diagnosis is made by the fact that the cardinal symptoms of the toxæmias, œdema, hypertension, albuminuria *et cetera*, are lacking.

Epilepsy appears to have no effect on the course of pregnancy.

Treatment.

The treatment of epilepsy during pregnancy is the same as at other times, for example, the administration of bromide with "Luminal".

There is no reason for terminating the pregnancy; but when repeated gestations threaten to produce a permanent mental deterioration, future pregnancies should be avoided.

As a rule, the epileptic mother should not nurse her baby, since lactation may aggravate the condition at least temporarily, and since there is always the risk that she may have a seizure at the time and injure the infant.

Routine sterilization of epileptics on the basis of the possible hereditary transmission of the disease is untenable, as the balance of medical evidence is against it. (2) (3)

INSANITY OF REPRODUCTION.

Seven to ten *per centum* of all female lunatics date their insanity from a pregnancy or puerperium.

General Aetiology of Insanity of Reproduction.

Insanity of reproduction is commonest in *primiparae* and the unmarried. Age increases the tendency to insanity. Worries and troubles in the pregnant woman appear to conduce to mental disorder; but undue proneness to worry may in itself be a sign of mental instability. Illegitimacy and desertion (more likely with the mentally abnormal), toxæmias, intercurrent diseases, prolonged labour and infection, and repeated pregnancies are probably contributing factors.

Insanity of Pregnancy.

Predisposing causes of insanity of pregnancy are: (i) a neuropathic heredity, (ii) general nervous instability, (iii) anemia and general debility.

Exciting causes are not definitely known.

Symptoms.

Symptoms appear at any time, usually after the fifth month of pregnancy. They are typically melancholic in type; mania is rare. States of depression going on to real melancholia with suicidal tendencies may occur, or there may be moral perversion, exaggeration of unnatural longings and delusions.

Prognosis.

The outlook is good as a rule in mental disorders occurring before the fourth month of gestation. When symptoms appear later they tend to become more severe until the birth of the child, when they disappear. Ninety *per centum* of patients recover in one year. In types other than the melancholic, for example, the maniacal, the prognosis is not good.

Treatment.

Induction of abortion or premature labour is not advisable unless the life of the patient is in danger.

Insanity of the Puerperium.

Insanity of the puerperium, that is, within six weeks of delivery, is the commonest form. Ninety *per centum* of cases occur in the first fourteen days. Acute delirium may occur during parturition.

Causes.

In a series of 61 cases, (i) no definite cause could be found in 15%; (ii) uterine infection was responsible in 27%; (iii) intercurrent infection, such as pyelitis or influenza, was a cause; (iv) eclampsia was responsible in 15%; (v) there was a family history of mental disorder or a history of former unstable mental balance in 27%.

Symptoms and Signs.

Mania is the characteristic form. The later the onset, the greater the tendency to melancholia.

Prodromal signs are: (i) insomnia; (ii) restlessness; (iii) unreasonably increasing dislikes; (iv) refusal of food or medicine; (v) delusions, such as delusions of being poisoned; (vi) aversion to husband, child *et cetera*; (vii) confusion and hallucinations.

The physical signs and symptoms of the attack are as follows: (i) headache, (ii) dry furred tongue, (iii) constipation, (iv) rapid feeble pulse, (v) slight rise of temperature, (vi) sudden outburst of mania, (vii) rapid incoherent speech, (viii) violent suicidal or homicidal tendencies.

Insanity of Lactation.

Insanity of lactation is that which occurs during lactation and more than six weeks after parturition. Causes are: (i) exhaustion due to months of suckling, (ii) rapidly repeated pregnancies, (iii) poverty, worry and debility.

The type of psychosis is melancholia.

Symptoms are as follows: (i) There is a general decline in physical condition. (ii) The patient looks ill, loses weight and becomes anemic. (iii) The breasts fail to secrete. (iv) Then mental exhaustion, confusion, inability to concentrate, depression and insomnia occur.

Improvement usually follows cessation of breast feeding, combined with complete rest and a generous diet.

The Termination of Pregnancy in Cases of Insanity.

Termination of pregnancy plays no part in the routine treatment of patients who are pregnant and insane. Therapeutic abortion should be restricted to those rare cases in which the life or the mental state of the mother is at stake, for example, in certain early mental diseases, such as *dementia præcox*, and certain manic depressives, when an alienist can dogmatically state that continuation of pregnancy is certain to hinder a cure or to establish a mental disorder permanently.

When insanity is established, however desirable on social or eugenic grounds, there is no medical justification, in fact no legal right, for the termination of pregnancy.

A history of a single recent attack (that is, within three years) of puerperal insanity, or of two previous attacks, constitutes an indication for abortion. The tendency for puerperal mania to recur is well recognized, one-third of the sufferers remaining permanently unstable; therefore a serious view of this condition is warranted.

The question of segregation, sterilization or legalized abortion is left to the mental experts. However, much can be done by eugenic marriage, birth control, and voluntary or State-demanded sterilization of the unfit. These are rational methods, and all have their advocates.

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ARTHRITIS DEFORMANS FROM THE VIEWPOINT OF AN ORTHOPÆDIST.

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THE different lesions which are comprised in the term *arthritis deformans* have been looked upon as happy hunting grounds for many different specialties. The physician sees an opportunity for trying out the latest remedies advertised by huge commercial firms whose knowledge of the pathology of the disease which they state can be cured by their product is always less than that of the physician himself. The oto-rhino-laryngologist seizes the opportunity of finding septic foci, which are in many instances innocuous, and then attempts to remove them. The radiologist would like to take pictures of every conceivable part of the body, and is bound to find some abnormality. The dentist can always cite cases in which the cure of the arthritis was as dramatic as the eradication of the apical sepsis was thorough; and so it goes on. If we could pool all the observations of reliable men as to the results of the different forms of treatment we might reach some definite conclusions on the subject. Unfortunately, for the last thirty years different schools have been following their own pet theories of treatment, without any attempt to analyse their results, in order to find out why one patient recovered rapidly from her rheumatoid arthritis after her tonsils were removed, while her next-door neighbour did not improve, but in fact became worse. I do not pretend that I can answer these questions; but I am trying to discover if there is any method whereby we can decide clinically which people need septic foci removed *et cetera*. So far I have found a blank wall at every turn. As I can still remember my dilemma, when a patient walked into the surgery during my days of general practice, I can appreciate now wherein my difficulty lay. Perhaps I was in the minority; but I am not ashamed to make the confession that I did not understand the pathology of the different types of chronic arthritis. I am not quite sure that I always distinguished the two main types, osteoarthritis and rheumatoid arthritis. However, realizing my former deficiencies in knowledge as the cause of my

difficulties, I do not propose to make this paper a pathological treatise, but I exhort you to study the pathological changes of these conditions. Without this knowledge you cannot appreciate what your therapeutic aims are. When I say study, I do not mean merely to read the pathology, but to get down to it and master it. This aspect of the subject is expounded very well in Timbrell Fisher's book on the knee joint.

Types of Chronic Arthritis.

There are three main types of chronic arthritis. They are: (i) osteoarthritis, (ii) rheumatoid arthritis and (iii) chronic villous arthritis. Mixed forms occur, and the commonest combination under this heading is that of osteoarthritis and rheumatoid arthritis. This is generally in the nature of a superimposed osteoarthritis in a rheumatoid joint, although the latter can supervene on an osteoarthritis in later life. In the latter instance tuberculous arthritis must be kept in mind, especially where the disease is confined to a single joint.

Pathology.

I shall outline briefly the changes in the components of the joint in the different types.

Osteoarthritis.

In osteoarthritis the primary change is in the articular cartilage, which undergoes a fibrillation and softening with consequent erosion. The latter may continue until the joint articulates with bony and not cartilaginous surfaces. Nature, in her attempt to heal the process, causes an overgrowth of cartilage around the sites of erosion and later at the periphery of the articular cartilage; it is the subsequent ossification of these that forms the osteophytes. The changes in the capsule and synovial membrane are later in their appearance. The synovial villi tend to undergo hyperplasia with an increase of vascularization, but there is no evidence of infection as in rheumatoid arthritis. Trauma may induce small hemorrhages, but there is very little cellular infiltration. Loose bodies may be formed by the detachment of chondromata that occasionally develop in the synovial villi. In the later stages the synovial membrane is frequently scarred as the result of secondary atrophic changes; the latter are also found in the capsule, peri-articular tissues and tendons. In the final stages the exposed bone ends become eburnated and grooved. Cyst-like cavities appear in the bones around the affected joints; they develop from areas of fibrosis in the medulla subjacent to the changes in the articular cartilage.

Rheumatoid Arthritis.

In rheumatoid arthritis the pathological changes are observed first at the junction of the articular cartilage and synovial membrane. There is an increase of vascularity with a focal cellular infiltration of lymphocytes. The synovial membrane is thickened and greyish-pink in colour, while the villi are greatly increased in number and size. There is

early pronounced periarticular oedema, but this is very often replaced by granulation tissue and fibrous thickening. These latter changes also make their appearance in the synovial membrane, and, as a result, inflammatory granulation tissue spreads like a pannus across the articular cartilage with consequent destruction of the latter. In many cases connective tissue grows from the cartilage which is not covered by this "pannus". If the granulation tissue becomes sufficiently organized, a fibrous ankylosis will develop; but during the process the joint is gradually disorganized. There is a depletion of the lime salts from the bones around the affected joints. This is due to the hyperæmia as much as to the disuse engendered by the disease.

Chronic Villous Arthritis.

We are even more ignorant about chronic villous arthritis than about the others. The pathological changes are confined mainly to the synovial membrane. The villi are increased enormously in size in the fully developed lesion, and contain foci of lymphocytic infiltration, resembling those found in rheumatoid arthritis. Cartilage frequently develops in the hypertrophied villi, and, if any of these villi become detached, loose bodies will result. Changes in the articular cartilage do undoubtedly occur in this condition, but they very rarely amount to more than irregular pitting. Periarticular oedema, followed by fibrosis in the tissues around the joint, is commonly seen, but it is never as pronounced as in rheumatoid arthritis.

Such is the brief outline of the pathology of the three main types of chronic arthritis. If the reader cares to pursue his pathological studies, he will obtain much help by reading all about the changes in joints in gonorrhœal arthritis and in Charcot's disease of joints. In the former, where the rôle of infection is not disputed, the changes have very much more than a superficial resemblance to those in rheumatoid arthritis; in the latter, where there is a straight-out neuropathy, the changes are exactly the same as in an osteoarthritis that has exaggerated itself.

Ætiology.

Rheumatoid and chronic villous arthritis show us pathological changes that are undoubtedly inflammatory, and the changes seen in these two conditions can be summed up as the joint's reaction to any infective process. It is not necessary for the organism to reach the joint; the toxins may be sufficient to produce this reaction, as is evidenced by the changes in the joints in syphilis and chronic gonorrhœa.

Osteoarthritis, on the other hand, does not show the pathological changes of inflammation, but rather the changes of degeneration and of the joint's reaction to continuous trauma. This trauma may be an alteration in the alignment of the limb, for example, as is seen in knock-knee or bow-leg. It may be the result of a change in the joint surface of one of the bones entering into the formation of the joint; this is well exemplified in the osteo-

arthritis that follows Perthes's disease of the hip joint. The "trauma" may be no more than advancing years and an increase in weight, or a disturbance of metabolism. In short, any abnormal condition can bring about the changes of osteoarthritis. In the mixed forms of arthritis both factors, infection and trauma, are at work.

In chronic villous arthritis the pathological changes resemble those of an infective process. Some observers go so far as to say that it is due to a gonorrhœal focus, and that careful inquiry will elicit the information that 70% of the patients affected with this type of arthritis have had antecedent gonorrhœa. On the other hand acute, subacute or chronic gonococcal arthritis does not cause the changes in the villi that are seen in this condition. It affects women more frequently than men; and it tends to single out the type of person subject to uterine fibroid growths and chronic cholelithiasis.

Symptoms.

Osteoarthritis.

Osteoarthritis is seen, as a rule, after middle age; but the monarticular type following injury or disease in a joint is frequently encountered during the third decade. Its onset is never acute, and at times the patient is unaware of the presence of any abnormality in his joints. Either polyarticular or monarticular, it displays a low-grade selectivity as does rheumatoid arthritis. With the exception of the spine, it favours the terminal interphalangeal joints, the knee and the hip, while the metatarsophalangeal joint of the thumb is involved quite often. Periarticular swelling is not pronounced, and in the absence of free fluid the articular swelling is localized to the vicinity of the chondrophytes and osteophytes. There is little limitation of movement in the joints until late. If the osteophyte formation is very pronounced, the infrapatellar pads of fat in the knee are likely to be nipped, and hæmorrhages may take place into them. This will cause enlargement of the pads and tenderness to pressure. On active movement of the joint a coarse creaking can be heard and felt with the palpating hand. The joints tend to be painful and stiff after short periods of rest, but much better after prolonged rest. Overuse is likely to produce severe pain and irritability. In general the monarticular type of osteoarthritis is more crippling and disabling than the polyarticular.

The first change revealed by X rays is a slight lipping of the articular margins, while shadows of localized synovial membrane proliferations may be seen. In the later stages a narrowing of the joint space is seen along with pronounced hyperostosis, while the ends of the bones are very irregular in outline. Diminished density is seen only after prolonged disuse, and bony ankylosis is rare.

Rheumatoid Arthritis.

Occurring most frequently in the age period from infancy to middle life, rheumatoid arthritis tends to have a sudden onset and displays a clinical picture of an acute, resistant and long-continued

joint affection. It is generally polyarticular, and favours the following joints: the wrists, the fingers, the knees, the elbows, the ankles and the shoulders. The other joints of the body are involved, but not so frequently as those mentioned, with the exception of the spine. I am not, however, including spondylitis in this paper. In the fingers it affects the proximal interphalangeal joints and spares the distal interphalangeal joints; and this selectivity in the fingers is one of the main and most important differential points between rheumatoid arthritis and osteoarthritis.

In the joints involved both articular and peri-articular swelling is seen, while free fluid is occasionally present. Early limitation of movement is considerable. This is due to muscular spasm, and, as a result, malpositions occur almost from the inception of the disease. Pain is almost constant, as is to be expected from the pathology. It is difficult to relieve at times, but rarely requires morphine, as does the gonococcal type of arthritis. The tendency to ankylosis must always be kept in mind. The general health invariably suffers, and the patient is usually of the less robust type with a ptotic diathesis. Muscular atrophy is rapid in its onset and very pronounced.

In the early stages no obvious changes in the articular cartilages or bones of the joints are seen by means of X rays, but the soft tissue changes and the presence of fluid in the joint can be distinguished. Later, the diminished density of the bones, the narrowing of the joint space and the punched-out areas at the synovial reflections without any bone reaction are reasonably diagnostic.

Chronic Villous Arthritis.

Seen most commonly in the knee, chronic villous arthritis starts as a swelling on the inner side of the joint. Pain, not so severe as in rheumatoid arthritis, and tenderness, confined to the area of involved synovial membrane, are present. Peri-articular changes are not the feature that they are in rheumatoid arthritis, while the limitation of movement is never so pronounced. In the fully developed condition the hypertrophied villi can be palpated. They impart the same sensation as a varicocele, with the addition of a feeling of doughiness. At this stage the joint is very enlarged, tender all over and limited in its movements.

X Ray Appearances.—The only X ray evidence of this condition is the appearance of a small punched-out area behind the articular cartilage. In the later stages a certain amount of decalcification will be present as a result of disuse.

Differential Diagnosis.

Rheumatoid arthritis has to be differentiated from two other conditions. At times it is impossible to distinguish between them, because they are practically the same process in a different form. Gonorrhoeal arthritis is one of these. At first a typical infection, it may later develop into a chronic arthritis which cannot be distinguished, at any rate clinically, from a true rheumatoid arthritis. The

finding of the gonococcus in the genito-urinary tract, or a positive response to the complement-fixation test, is helpful evidence. The other condition is a subacute pyogenic infection of a joint. In this case we have nothing to help us. In the former instance, as mentioned above, the necessity of administering morphine is a clinical fact very much in favour of the gonococcus being the cause of the joint condition.

I have seen tuberculous arthritis diagnosed as rheumatoid arthritis on several occasions, especially in older people. After a few days' rest the tenderness in rheumatoid arthritis is confined to the synovial reflections, while in tuberculous arthritis the tenderness is more diffuse. Tuberculous arthritis is nearly always monarticular, while rheumatoid arthritis tends to be polyarticular. X ray examination may be helpful. In tuberculous arthritis definite focal destruction may be seen, and the articular surfaces may be irregularly faceted. A biopsy may be needed in some cases to settle the point. A correct diagnosis is essential, because the treatments in the two conditions are diametrically opposed.

Osteoarthritis will cause difficulty in diagnosis only when it is monarticular, and then it may be confused with a Charcot's joint. Similarly, a Charcot's joint is very commonly mistaken for osteoarthritis. The presence of tabes or syringomyelia will make the diagnosis clear. As a rule tabes gives rise to arthropathy in the lower limb and syringomyelia causes arthropathy in the upper limb. The joint is generally painless and goes on to complete disintegration, becoming freely movable in all directions and containing large pedunculated masses. Synovial effusion is nearly always present, and the coarse, irregular creaking is very characteristic of the condition. X ray examination readily makes the diagnosis clear.

Treatment.

The treatment differs in the three types of chronic arthritis. This is only to be expected from the pathology. For example, the tendency to ankylosis in rheumatoid arthritis is a contraindication to prolonged immobilization in this form of arthritis, while the absence of this tendency in osteoarthritis, along with the changes of degeneration, would lead us to expect relief.

Osteoarthritis.

I shall begin by stating that no medical treatment is or has been of any benefit in this condition; a sweeping statement, no doubt, but true as far as the joint is concerned. Admittedly, the administration of thyroid extract does appear to bring about some improvement in those unfortunate women who tend to become overweight in the fifth decade; but surely it is the improvement in the metabolism, with the resultant diminution of weight, which is the main factor, for the great majority of these women are affected in the knees. Any obvious septic focus should be removed, not because its removal will have any effect on the joint condition, but because

it will improve the general condition of the patient. The open-minded observer must admit that he has never seen any real improvement in an osteoarthritic joint caused by the removal of septic foci. Whilst I am on the subject of septic foci, it may be as well to point out that their removal gives most relief to those patients who are suffering from arthralgia and myalgia without any obvious pathological changes in the painful parts. Drugs play their part in the alleviation of pain, but can have no effect from the curative aspect. Opiates, for obvious reasons, should be administered with the greatest caution.

As we are dealing primarily with a degenerative process, the treatment of osteoarthritis is really that of alleviation, and must be worked out mechanically for each joint. Rest relieves the pain and increases the range of movement; even prolonged immobilization, provided it is not in a position of strain, will not lead to permanent stiffness in these joints. They may, however, need to be restored by the judicious use of massage and heat; and when they are restored it will be found that the range of movement has increased.

I shall outline the scheme of treatment of osteoarthritis, for the details would occupy too much space.

Prophylaxis.—The prevention of such a condition as osteoarthritis is well nigh impossible in the great majority of cases. There are, however, conditions in which subsequent arthritis of this type is a common sequela, and this complication must be kept in mind when the treatment of the original lesion is being planned. Fractures near or into joints, especially in the lower limb, are very liable to be followed by traumatic osteoarthritis. It is essential in the treatment of these injuries to restore the joint surface by the closed method if possible, by the open method if necessary, and at the same time to see that the alignment of the limb is correct. Failure to observe these simple rules is a frequent source of trouble later; there is an optimum position for the working of a joint and, if this is altered, an abnormal strain is thrown on to the articular surfaces with consequent trauma to the articular cartilage. Uncorrected bow-legs or knock-knees will similarly lead to trauma of the articular cartilage of the knee joint, as untreated flat-feet will affect the ankle and knee joints. After Perthes's disease of the hip some permanent deformity of the femoral head remains. Improper apposition between the articular cartilage on it and that covering the acetabulum is the cause of osteoarthritis of the hip joint at the end of the third decade of life in the great majority of sufferers from this complaint. To minimize the chances of this late complication, it is essential to prevent weight-bearing until the diseased head has completely recalcified; to restore it to normal is almost impossible. The abnormal relationships between the femoral head and acetabulum in *coxa vara* and an old slipped epiphysis are also the precursors of osteoarthritis of the hip joint. An early attempt to restore the

correct alignment by means of an osteotomy is called for. These few examples will serve to emphasize the importance of keeping the end result of many conditions in mind.

Mechanical Treatment.—In the upper limb the joints most commonly affected by osteoarthritis are the elbow, the shoulder and the carpo-metacarpal joint of the thumb. As a rule the affection of these joints is not so crippling as that of the joints of the lower limb, and the explanation is that there is no weight-bearing by the former. If the lesion in the joint is acute when the patient is first seen, as evidenced by great tenderness at the synovial reflections, by the presence of effusion and by obvious heat of the part, complete rest is indicated. Before this is instituted, it should be explained to the patient that his form of arthritis is not the crippling form; for most people know someone who is the victim of the much-dreaded rheumatoid arthritis, and this explanation will go a long way to relieve the patient of his symptoms. Complete rest to the shoulder joint is obtained by means of the abduction frame, and the arm is left on this appliance until the acute symptoms have subsided. For the elbow, all that is necessary is a sling with the joint at or near a right angle. In the case of the carpo-metacarpal joint of the thumb, it is very rarely necessary to immobilize the joint completely, and sufficient rest can be procured by means of a well-fitting leather glove made into a mitten. After the acute phase has passed, the amount of use the joint is given must be limited; if necessary the patient must find a lighter job (this is frequently the most difficult part of the treatment) and be prepared to rest his arm in a sling as occasion demands. A bandage round the elbow will limit the range of movement of the joint and prevent the synovial fringes from being nipped; by this simple procedure the patient can be saved a lot of discomfort. The wearing of the leather mitten mentioned above will ease the pain of an osteoarthritic carpo-metacarpal joint, and can be continued as long as desired.

When we come to the shoulder joint, we are faced with a more difficult problem. It is not easy to limit movement in this joint and prevent the onset of troublesome adhesions in the lower part of the capsule, and no patient will wear an abduction frame indefinitely. Fortunately, osteoarthritis in this joint is relatively rare; but, when it is encountered, it generally follows trauma, and the added psychological insult of the *Workers' Compensation Act* makes it doubly difficult to relieve the patient's symptoms.

In the lower limb the same principles apply: complete rest during the acute stage, and limitation of movement when the acute stage has passed, along with the removal of any known trauma which is constantly being applied. These are the indications in osteoarthritis affecting the hip, knee, ankle and foot. For the hip joint complete immobilization may be obtained by means of a plaster spica or a Thomas's hip splint. This can be followed by the

application of a long flannel spica which will limit the movement of the joint and prevent trauma to the altered structures. A back splint or a walking caliper will give complete rest to the knee joints, while a well-applied flannel bandage will limit movement. The raising of the heel of the shoe on the affected side will prevent full extension and thus save the structures in the front of the joint from being nipped by the osteophytes. In the ankle complete immobilization can be procured by the use of a crab splint; and this can be followed by the application of a moulded leather anklet or a firmly applied bandage. Movements in the foot can be prevented by the insertion of a metal sole-piece into the boot or shoe, while complete immobilization can be secured by the application of a plaster cast. It is wiser to avoid complete immobilization of the foot if it is at all possible; the use of the sole-piece is generally all that is needed, while the correction of any faulty posture will add considerably to its efficacy.

The great majority of joints affected with osteoarthritis do not need complete immobilization when first seen. All that is necessary is the application of some device to limit the amount of movement in the joint. I have given some indication of the different methods that are applicable to the different joints. In the lower limb the presence of some postural fault as an aggravating factor must be remembered and corrected if possible.

Manipulative Treatment.—Forcible manipulation of a joint under an anæsthetic is sometimes indicated, but for practical purposes this form of treatment is limited to the shoulder and hip joints. I have used it with success in other joints, but the indications are so rare, except in the case of the shoulder and hip joints, that I think it is a safe rule to manipulate only these joints. Often a patient with early osteoarthritis will present himself with the syndrome of adhesions, almost always in the shoulder or hip, the diagnosis of which I have already given in detail in a previous paper. These patients are completely relieved of their symptoms for many months, or even years, by manipulation. Their osteoarthritis progresses and eventually needs further treatment, but the manipulation allows them to enjoy their freedom for a longer period.

Physical Therapy.—The main function of massage, hydrotherapy and heat in the form of diathermy, radiant heat, infra-red radiation *et cetera* is to increase the blood supply of the part. This increase, unfortunately, is only temporary, and gives ease in most cases only while physiotherapy is being applied. As an adjunct to rational mechanical therapy physical therapy has a definite part in the treatment of osteoarthritis, but its exclusive use is unreasonable.

Operative Treatment.—Arthroplasty in many instances would appear to be the ideal treatment, but the percentage of failures is far greater than the percentage of successes. Some of the best examples I have seen of arthrodesis of the hip were failed arthroplasties.

Arthrodesis is the best that can be offered in a crippling monarticular osteoarthritis. This latter type generally follows trauma. Some of the other causes have been mentioned above, especially in connexion with the hip joint, and the corresponding joint of the opposite side should be given a clearance before the fusion is undertaken. In an elderly subject the operation of arthrodesis can be a formidable procedure, and as a general rule it should be reserved for the younger sufferers.

Excision of the joint is really a modified arthroplasty, but when successful it does not give as much movement as the latter. It can be used with advantage in certain cases of involvement of the elbow joint, and is very useful in that type of arthritis termed *hallux rigidus*, in which the metatarsophalangeal joint of the great toe is involved. It has been used for osteoarthritis of the other joints, but with varying degrees of success.

Osteotomy of the femur for osteoarthritis of the hip joint, as practised extensively by McMurray, is a form of treatment which yields excellent results in the majority of cases of unilateral involvement of the joint. The after-treatment is just as important as the operation itself; reference to any of McMurray's writings on the subject will provide the necessary details.

Jones's extraarticular pseudarthrosis of the hip joint is a useful procedure, when both joints are involved and movement in one is essential. The hip joint is the one joint in which nearly all movement may be lost in osteoarthritis. This is due to the mechanical arrangement of the joint, not to ankylosis.

The removal of loose bodies is a surgical procedure that is frequently necessary. It should be carried out through the smallest possible incision, and the loose bodies should be milked to the surface. Arthrotomy of an osteoarthritic joint is not conducive to the amelioration of the disease. Whilst I am on this point it may be as well to point out that it is extremely unwise to remove a torn cartilage from an osteoarthritic knee joint; it is better merely to treat the arthritis.

Rheumatoid Arthritis.

Rheumatoid arthritis, which may be acute or chronic, appears to be due to some infective process, and should be treated by the physician and orthopædic surgeon working in close cooperation. The main function of the latter is to prevent or cure deformities, and to retain or restore movement in the affected joints.

Prophylaxis.—The effect of faulty posture in predisposing to rheumatoid arthritis has been emphasized by many observers. The individual with round shoulders, exaggerated lumbar lordosis, prominent abdomen, knock-knees and flat-feet is a very good subject for the sowing of the seeds of infection; his respiration is impeded, his circulation is interfered with and the function of his abdominal organs is upset as the result of the visceroptosis. The literal meaning of the word "orthopædic" must be applied to these individuals;

Britain has recently set a good example by the campaign providing for an "A1" nation. By setting up our children with proper food and living conditions and by the use of suitable physical exercise we can diminish the incidence of this crippling condition and save the community much expense.

Treatment in Early Stages.—In combating the infection the physician's knowledge is essential. He may elect to administer one of the gold preparations, in which I have great faith after seeing them used extensively in the north of England. Obvious septic foci will be eradicated, and so forth. From my own observations I am convinced that any method of treatment which curtails the amount of food the patient eats is detrimental to the general health and prevents the formation of those substances that are so essential in combating infection.

Prevention and Treatment of Deformity.—The deformities of rheumatoid arthritis, first due to muscle spasm, soon become fixed as the result of changes in the structures of the joint, which, if allowed, will progress to bony ankylosis. During the acute stage of the process the affected joints will need rest. This is obtained by appropriate splinting, but the tendency to ankylosis must constantly be kept in mind, and the splints must be removed to allow assisted active movements. In some cases the pain is too severe to permit even the slightest amount of movement, and these joints must be kept in the optimum position for ankylosis. Very rarely, however, does ankylosis occur under six or eight weeks; and if physical therapy can be instituted within that period, the chances of a movable joint being obtained are quite good.

If deformity has already occurred, it must be corrected at the earliest possible moment and the joint placed in the optimum position. Thereafter it is treated on the principles mentioned in the previous paragraph. If the spine is involved and the patient is to be treated in the recumbent position, it is absolutely essential to see that a prominent kyphosis is not allowed to develop, for, if it does, the poor patient's field of vision will be restricted to a small circle round his feet. These patients are most successfully treated on a Jones's frame.

In treatment of the lower limb, weight extension can be used effectively to prevent and correct deformity; but it is essential to see that the weight acts in the right axis, otherwise the pain will be increased and the patient's confidence lost.

Treatment in the Late Stages.—Once the acute stage has passed, there may be deformities to correct or stiff joints to mobilize. The former can be treated by means of appropriate splinting, in which case the correction is gradual, or forcible manipulation under an anæsthetic may be used. If the deformities are being corrected with splints, it is essential to remove them for daily movements of the joints so as to prevent the formation of adhesions. Even when manipulation is used, splints will be necessary to retain the corrected position in some cases, but in the majority active movements

should be encouraged and splints worn only at night, if there is sufficient muscle spasm to reproduce the deformity. In the chronic stage of the disease the return of movement in the joints is aided considerably by the external application of heat, and the performance of the necessary exercises in a warm bath is very beneficial. It must, however, be remembered that a prolonged immersion of the body and limbs in a bath that is too hot is exhausting to the patient, and muscle fatigue will occur rapidly.

Manipulation of rheumatoid joints must be very carefully carried out and used only after the acute stage has passed and the inflammatory reaction is quiescent. If it is done too soon, severe trauma will result and activity will recur, with the loss of much valuable time. The watchword is gentleness, for the bones are atrophic and readily fractured, and it is wiser to restore the amount of movement by repeated manipulations under light anæsthesia than to try to obtain full correction of a deformity and full range of movement at a single sitting. Never repeat the manipulation until the range of movement already present is fully controlled; the whole procedure is the intelligent application of Thomas's test of soundness of the joint. As already mentioned, heat, to which massage can be added with benefit, is helpful in restoring movement to these joints. Assisted active movements are to be used rather than passive movements. Passive movements frequently cause trauma with a resultant reaction in the joint and a diminution in the range of movement. The patient will never do himself any harm by active movements.

It is a good rule never to let any joints affected with rheumatoid arthritis ankylose; but exceptions may be made of the wrist and foot, because loss of movement in these joints does not materially affect the functions of the limbs. On the other hand, if you let such a joint as the hip ankylose, the other joints of the limb will readily follow suit because of the difficulty in maintaining movement in them. It is, however, occasionally decided to arthrodese a joint affected with rheumatoid arthritis, especially when the disease is monarticular. In these cases it is very rarely necessary to operate, because prolonged immobilization will bring about the desired result, as many medical men know to their horror.

Operative Treatment.—Operative treatment is never considered until the acute stage of the disease has completely subsided. What has been said about the different procedures under the treatment of osteoarthritis pertains, with very little modification, to rheumatoid joints. In addition to those procedures others have been used with varying degrees of success in the hands of different surgeons. By synovectomy good results have been obtained in selected cases; I have not seen any, but I have no doubt that they do occur. Bone drilling is another procedure about which reports are conflicting. I can understand relief following this procedure if there is an overgrowth of vascular connective tissue in the bones, such as occurs in

osteitis fibrosa cystica and *osteitis deformans*. In many cases of rheumatoid arthritis these changes are found. Bone drilling should be reserved for those cases in which persistent, deep boring pains are felt in the bone ends.

Chronic Villous Arthritis.

The treatment of chronic villous arthritis is not so complicated as that of the other conditions under discussion. If the patient is seen early, rest to the joint for a month may give considerable relief; this should be followed by some device to limit movement in the joint, so that the hypertrophied villi will not be unduly traumatized. If rest does not cause subsidence of symptoms, synovectomy is indicated. After this operation there are generally no symptoms for many years, except for the loud creaking which occurs on movement, and then osteoarthritis appears. If the condition has been present for a long time when the patient is first seen, arthrodesis is the treatment of choice.

Prognosis.

Osteoarthritis.

With patience and attention to detail and an understanding of the underlying pathology, most patients with osteoarthritis can be relieved of their symptoms. In the great majority of cases the onset of symptoms is due to some injury, which may be quite mild. If the damage done to the joint structures is allowed to heal and excessive use is prevented, there may be complete absence of symptoms for many years. The correction of any static deformities and the removal of any constantly acting trauma are essential elements in the scheme of treatment.

Rheumatoid Arthritis.

The outlook in rheumatoid arthritis is better than most people imagine. Very many sufferers make a complete recovery and have full use of their joints; yet it must be admitted that a vast amount of crippling and deformity is the end result. Many of those whose lot comes within the latter category could be helped appreciably, for the disease has become quiescent or even arrested, and all they need is intelligent cooperation between the physician, orthopaedic surgeon and physical therapy department.

AN INVESTIGATION OF THE SOURCE OF STAPHYLOCOCCAL INFECTION IN ACUTE OSTEOMYELITIS.

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In the figures for the numbers of patients suffering from acute osteomyelitis treated at the Children's Hospital, Melbourne, there are certain

fluctuations from year to year which suggest that the relative frequency of the disease might in some way be influenced by differences in the types of staphylococci prevalent amongst the child community at different periods. It is well known that *Staphylococcus aureus* is a not uncommon inhabitant of the upper respiratory tract; and, from analogy with the facts known about hemolytic streptococci, it was thought to be worth while considering the possibility that "invisible" epidemics of staphylococcal infection might exist in the respiratory tract. If certain strains producing such subclinical infections were more likely than others to settle in a damaged epiphyseal junction, a possible explanation of these periodical fluctuations would be available.

Any attempt to explore these possibilities must necessarily wait upon the development of a method for detecting individual differences between strains of *Staphylococcus aureus*. Something analogous to the Griffith typing methods with hemolytic streptococci is required. Unfortunately, serological tests are at present of little value. The great majority of strains of *Staphylococcus aureus* fall into one antigenic group, characterized by the polysaccharide haptene of Julianelle. There are undoubtedly minor differences which can be detected by cross-absorption tests, but these have not been sufficiently studied to be of practical importance.

In their work on staphylococcal bacteriophages, Burnet and Lush⁽¹⁾ (1935) found some indication that strains of *Staphylococcus aureus* could be divided into groups on the basis of their reactions to a series of phages. Unfortunately, such differences as were found were mainly in regard to their susceptibility to certain weak phages, which are very difficult to preserve and are unsuited for use in what was primarily a clinical investigation. In Burnet and Lush's experience all strong staphylococcal phages are closely related; and though there are minor differences between their races AuI, AuII, AuIII and AuIV in serological character and in the general range of cultures which they lysed, they must be regarded as comprising a homogeneous group. All *aureus* strains are susceptible to some degree of lysis by each of these phages on agar; but Burnet and Lush found one group of strains which, although they absorbed phage well and showed lysis on agar, were not cleared and did not support multiplications of phage in broth. This suggested to us what possibly useful results could be obtained if clearing in broth was utilized as the indicator of phage action rather than lysis on agar. Examination of a number of staphylococcal cultures from both the upper respiratory tract and the bony lesion in children suffering from osteomyelitis revealed concordance between the reactions of strains from the two sites on the same patient, and certain apparent differences between the strains obtained from different patients. The results appeared hopeful enough to justify the application of the method to a larger series, the results of which are reported in this paper.

Methods.

Cultures were made on ascitic agar slopes from material obtained at operation from the infected bone. As a rule a pure culture of *Staphylococcus aureus* resulted. Only cultures showing the typical *aureus* colour and producing hæmolytic on horse blood agar plates were used in the investigation. Cultures were also made as soon as possible after the patient's admission to hospital, from swabbings of the nose and throat, or both; these were plated on blood agar. If any hæmolytic *aureus* colonies were present, a subculture was made from a typical colony for phage tests. In several instances cultures were also made from the blood and from any lesion suspected of being staphylococcal in nature. Two patients examined *post mortem* provided a series of cultures from various organs. These were studied along the same lines as the other cultures.

The bacteriophages used were AuI, AuII, AuIII and AuIV of Burnet and Lush's series. Sufficient stock bacteriophage of each type was prepared for the whole series of tests.

Broth cultures of the staphylococcal strains to be tested, together with a control strain known to be lysed by all phages, were incubated overnight. Next morning a few drops of each culture were subcultured to 50 cubic centimetres of broth at pH 8.0 and incubated for an hour. Amounts of five cubic centimetres from each of these young cultures were measured into each of five sterile test tubes and a loopful of each phage, diluted to 1 in 100, was added. The fifth tube received no phage and acted as a control standard for turbidity of the final cultures. The tubes were incubated at 37° C. and read after six and after twenty-four hours' incubation. Those in which complete clearing or much less turbidity than the control at twenty-four hours was seen were recorded as having been lysed; those almost or quite as turbid as the control were considered "negative". It should be noted, however, that most of these "negative" cultures had allowed some multiplication of phage, as was indicated by the appearance of lysis when subcultures were made to agar.

In order to simplify the tabulation of the results, cultures will be classified as follows:

- A: Clear with all phages.
- B: Not clear with any phage.
- C: Clear with phages AuI, AuII and AuIV only.
- D: Clear with phages AuII, AuIII and AuIV only.
- E: Clear with phages AuI, AuIII and AuIV only.
- F: Clear with phages AuI and AuIII only.

The results obtained are summarized in Table I. In order to obtain some idea of the types of staphylococci present in the upper respiratory tract of children at the present time, a series of swabs were taken from nose and throat of patients with no obvious staphylococcal infections. Strains of *Staphylococcus aureus* were obtained in nine cases; five strains were of group A, four of group B.

TABLE I.

Differentiation of Strains of *Staphylococci* from Patients with Osteomyelitis.

Patient.	Type of <i>Staphylococcus</i> obtained from Various Sites.			Time when Culture was Made.
	Bone Lesion.	Nose and Throat.	Other Sites.	
M.K.	A	A	Blood A Pimple A Lung A Antra. Mediastinum A	Ante mortem. Post mortem. Post mortem.
A.McD.	B	B, B	Skin lesion B Blood B Heart B Tooth B	Ante mortem. Ante mortem. Post mortem. Ante mortem.
C.A.	A			
V.A.	A			
B.B.	A			
G.C.	C	C		Nose culture was taken on day of admission to hospital.
H.C.		A	Blood A	
L.D.	D	A, B		
R.G.	F	A	Blood F	
R.K.	E	E		Nose culture was made on day of admission to hospital.
A.R.	A	A		
W.S.	A	A	Burns A Blood A	
J.H.T.	B	B	Impetigo B	
M.T.	A	B		
S.T.	A	D, B		
K.W.	F			
M.W.	A		Blood A	
R.W.	A	C	Blood C	
A.Y.	B	B		

Discussion.

As is probably inevitable in the early stages of a clinical-bacteriological investigation, these results

have given us, not an answer to our problem, but an indication of the difficulties to be expected in solving it. The method of differentiation is not an ideal one, and a good deal more work on the purely bacteriological side is necessary to establish how reproducible are the differences between the phage reactions of the groups we have delimited. If the differences can be taken at their face value there are still sufficient difficulties in the interpretation of the results. Since staphylococci of the commonest groups, A and B, are about equally present in the nose and throat of normal children, their presence in throats of children with osteomyelitis can be discounted as of no significance in a series so small as the present one. This leaves for consideration only those cases in which relatively unusual types of staphylococci were found. In two of these, G.C. and R.K., the same type of staphylococcus was isolated from the nose as from the lesion, and there can be no serious doubt that the two strains had the same ultimate origin. Whether the osteomyelitis was a secondary result of the upper respiratory infection or *vice versa*, however, can hardly be stated with certainty. There is a certain presumption, but no more, that the nasal infection preceded the osteomyelitis. This investigation has been wholly of a preliminary character, and we feel that much more work would be necessary before any conclusions could be drawn. The method seems to offer some hope that in a large series of cases, adequately investigated, it would be possible in a certain proportion to provide definite evidence of the portal of entry of the staphylococcus responsible for the serious lesion.

Summary.

A method of differentiating staphylococcal strains by means of their susceptibility to lysis in broth by a series of bacteriophages is described.

In children suffering from osteomyelitis a proportion harbours the same type of staphylococcus in the nose and throat as is present in the bony lesion. The possible significance of this is discussed.

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ENDONASAL ANTROSTOMY: AN X RAY STUDY.

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Two years ago I⁽¹⁾ presented a follow-up of cases of antral infection. The weakness of that investigation lay in the fact that evaluation of results was based on patients' replies to a *questionnaire*, because clinical and radiological examination in all cases was impracticable. In that paper I expressed an increasing loss of confidence in the operation of endonasal antrostomy; and subsequent experience has tended to increase that feeling. This communication presents an X ray study of 85 antra in 44 patients on whom the operation had been performed from one to six years previously.

The Operation.

Some ten years ago endonasal antrostomy was becoming popular. There was a reaction against radical operations in the medical profession, and a more conservative procedure was welcomed. The influence of British rhinology in favour of this operation was very strong, and Australian post-graduate students always remarked on the small number of radical operations performed in clinics abroad. Repeated lavage was infrequently used in recent infections; and in these cases the endonasal operation was advocated in preference to the radical operation. Finally, the fear of damage to tooth buds in young children influenced many surgeons to perform endonasal antrostomy. This has been the reason for the performance of the majority of this series of endonasal antrostomies. Considerable study has been devoted to the technical details by various surgeons, and it can be said that, except for young children, technical success has usually been attained. In this study of 59 openings examined, only nine were defective. All of these had been made in young children.

Results of X Ray Investigation.

The material for this investigation comprises twenty-seven children and seventeen adults. Of these subjects, forty were operated upon in my own private practice, whilst in the other four the operations were adequately performed by some other surgeon. Evidence was similar in both groups. From a survey of the whole series information of importance can be obtained if the cases are placed in the following groups: (i) cases in which lavage preceded the operation (Table I); (ii) cases in which no preliminary therapeutic lavage was done (Table II).

The tables require a little explanation. Pre-operative findings are given in the columns on the left-hand side, whilst the post-operative study is

TABLE I.

Patient's Number.	Pre-operative Diagnosis.						Post-operative Examination.					
	Previous X Ray Result. ¹		Therapeutic Lavage Before Operation.				Time Since Operation.	X Ray Examination, February, 1938. ¹		Condition of Openings.		History Since Operation.
	Right Antrum.	Left Antrum.	Number.	Right Antrum.	Number.	Left Antrum.		Right Antrum.	Left Antrum.	Right Antrum.	Left Antrum.	
1			3	Pus ++	3	Pus ++	Years. 1	+++	+++			Yellow nasal discharge and snuffles. Partially successful.
2			10	Pus ++			1	+++		Good.		Satisfactory. Nasal obstruction still present.
3			9	Pus ++	9	Pus ++	4½	+++	+++	Good.	Good, pus +.	Satisfactory. Nasal discharge and obstruction. General health improved.
4			10	Pus ++	10	Pus ++	3	+++	+++			General health improved. Colds. Nasal discharge and obstruction.
5			7	Pus +	7	Pus ++	3	++	+++			Nose satisfactory. Frequent carache.
6			9	Pus +	9	Pus +	3½	+++	+++	Good.	Good, pus +	General health improved. Still colds and nasal discharge.
7			2	Blocked, pus +	2	Blocked, pus +	3½	++	++	Good, pus +	Good, pus +	Slightly asthmatic. Nasal discharge and obstruction.
8	++	++	4	Pus +	4	Pus +	5	++	++	Good, clear.	Good, clear.	General health improved. Satisfactory. Hay fever.
9	++	+	4	Pus +		Clear.	1st 4 2nd 1	+++	++	Closed, pus +	Small, clear.	Asthmatic. Operation repeated because first opening had closed.
10	++	++	3	Blocked, pus +.	3	Blocked, pus +	3	+	+	Good.	Good.	Nasal discharge and headaches still present.
11			4	Pus +	4	Pus +	4	++	++	Good, pus +	Good, pus +	Nasal discharge and colds.
12	+	+	6	Pus +	6	Pus +	5	+++	+++	Good.	Good.	Radical operation July, 1937.
13	+	+	4	Pus +	4	Pus +	5	+++	+++	Good.	Good.	Asthma stopped. Nasal polypi +.
14	+		6	Pus +			2	+++		Good, pus ++		Nasal discharge. Culture of antral pus resulted in hemolytic streptococci.
15	+++	+++	11	Pus +	6	Pus +	4	Clear.	Clear.	Good.	Good.	Radical operation May, 1938. Colds still frequent.
16	+++	++	4	Pus +	4	Pus +	4	+	+	Good.	Good.	Very satisfactory.
17	+++	++	8	Clear.	8	Clear.	4	+++	++	Good, pus +	Good.	No better. Radical operation May, 1938.

¹ +++ = Gross mucosal thickening. ++ = Moderate mucosal thickening. + = Slight mucosal thickening.

contained in the right-hand columns. Where there is no entry in a column the examination has been omitted.

In Table I, dealing with cases in which lavage preceded the operation, of 32 antra examined, gross mucosal swelling was found in 16 (50%), moderate mucosal swelling was found in 10 (21%), slight mucosal swelling was found in 4 (13%), and 2 (6%) were clear.

In some of the cases reservations are necessary. For example, in Case 15 the antra were radiologically clear after treatment by lavage, and the operation was performed three months later in an endeavour to arrest repeated colds. Similar remarks apply to Case 16, in which some weeks elapsed between a clinical success with lavage and subsequent operation; but the result of lavage was not checked radiologically. In both these cases the good result may be credited to the preliminary lavage.

An opinion based on X ray findings alone would suggest that endonasal antrostomy was useless when lavage had failed to terminate an antral infection. Clinical support is added to this opinion by a study of the extreme right-hand column; in these cases evidence of persisting nasal disease was apparent. Five antra in three patients were subsequently opened via the canine fossa, and grossly diseased mucous membrane was completely removed.

In Table II, dealing with cases in which there was no preliminary treatment by lavage, we find a more mixed collection. In some lavage was rejected for nervous or geographic reasons; in others the opportunity was taken to combine the operation with surgical attention to another part of the nose or to the throat. Where one diagnostic lavage was performed the result is stated. Similarly, when the opportunity occurred to examine the openings and to perform lavage some years after the operation, the result of that examination is given.

In this table it is seen that of 53 antra examined radiologically, gross mucosal swelling was found in 19 (36%), moderate mucosal swelling was found in 13 (23%), slight mucosal swelling was found in 12 (22%), and 9 (19%) were clear.

The difference in the radiological findings in the two groups may be explained by the assumption that some of the good results obtained in Table II might have been obtained by lavage.

In Table II there are a few cases of non-suppurative mucosal hypertrophy, in which radiological evidence before operation was definite, but lavage was without result (Cases 17, 28, 36, 37). The cause of these mucosal swellings is still obscure; but whether they are allergic, the result of past infection, or actively infective, radiological evidence suggests that endonasal antrostomy is not curative.

TABLE II.

Patient's Number.	Pre-operative Diagnosis.					Remarks.	Time Since Operation.	Post-operative Examination.				History Since Operation.
	Previous X Ray. ¹		Diagnostic Lavage before Operation.		X Ray February, 1938. ¹			Condition of Openings.				
	Right Antrum.	Left Antrum.	Number.	Right Antrum.	Left Antrum.			Right Antrum.	Left Antrum.	Right Antrum.	Left Antrum.	
18	+++	+					Years. 5	+	++	Good.	Closed.	Nasal discharge. Recurrent otitis.
19	++	+					5	Clear.	Clear.	Good.	Good.	Vasomotor rhinitis.
20	++	++				At operation, both pus +.	5	+++	+++	Good.	Good.	Satisfactory. Return of cough with colds.
21	+++	+		Cystic fluid.			6½	++	+	Good.	Good.	General health improved. Hay fever, nasal discharge and obstruction.
22	+	+					6	Clear.	Clear.	Small.	Closed.	Successful. Nasal obstruction.
23	++	++		Cystic fluid.	Pus +		6	+++	++			Sore nose with obstruction.
24	+++	++					4	+	+			Satisfactory.
25							2	++	+	Good.	Good.	Nasal discharge. Recurrent otitis.
26	+++	+++				Another surgeon.	2	+++	+++	Good.	Good.	No better. Polypi left side.
27	++	++					5	Clear.	Clear.	Pus +.	Pus +.	Radical operation, 1937.
28	++	++		Clear.	Clear.		5	+	+	Closed.	Closed.	Nasal discharge. Colds frequent.
29						Another surgeon.	5	+++	+	Closed.	Closed.	Bronchiectasis. Nasal discharge. Radical operation May, 1938.
30	+++	++					4	+++	+			Nasal discharge and obstruction. General health improved.
31			1	Clear.	Pus +++		4	++	+++	Good.	Good.	Persistent nasal discharge.
32	+++	+++					6	++	++			Satisfactory.
33	+++	+++		Pus +.	Pus +.		4	+++	+++	Good.	Good.	Nasal discharge persists.
34	++	++					5	Clear.	Clear.	Pus +.	Good.	Lavage required after colds.
35	+++	+++				Another surgeon.	3	+++	+++	Good.	Good.	Polypi left side.
36	+	+	1	Clear.	Clear.		3	++	++	Good.	Good.	
37	+	+++	1	Clear.	Clear.		4	++	++	Good.	Good.	Much better. General health improved.
38	++	++	1	Pus +.	Pus +.		5	+	Clear.			Most unsatisfactory. Nasal discharge and cough.
39	++	++	1	Pus +.	Pus +.		4	++	+++	Good.	Good.	Colds still frequent.
40	+	++	1	Tight ostium.	Tight ostium.		4	++	++	Good.	Good.	Satisfactory.
41	+	+				Combined with tonsillectomy.	5½	+++	+++	Pus +.	Pus +.	Slightly asthmatic. Nasal discharge and colds.
42	+	+++				Combined with left radical an- trostomy.	5	+++		Good.		Colds still excessive.
43	+++	Clear.				Combined with S.M.B.	4	+++	+++			General health improved.
44	+	+				Combined with tonsillectomy.	4	+	+	Good.	Good.	Very satisfied.
												Satisfactory.

¹ +++ = Gross mucosal thickening. ++ = Moderate mucosal thickening. + = Slight mucosal thickening.

TABLE III.

	X Ray Findings.			
	Gross Mucosal Thickening.	Moderate Mucosal Thickening.	Slight Mucosal Thickening.	Antra Clear.
Table I	% 50	% 21	% 13	% 6
Table II	% 36	% 23	% 22	% 19

Comment.

The results of this radiological study are clearly unfavourable to the operation of endonasal antrostomy. It has been demonstrated physiologically that dyes are evacuated from the maxillary antra via the normal ostium, notwithstanding the presence of a large dependent naso-antral opening. Clinically, it has often been observed that a pool of mucus lies on the floor of the maxillary antrum, notwithstanding a large naso-antral opening.

The cure of the antral infection depends on the inherent ability of the ciliated epithelium to return to its normal physiological state. Removal of secretions retarding recovery depends on the strength of ciliary activity and the patency of normal ostia. Once the ciliated epithelium has ceased to function physiologically and has become a permanent pus-producing mechanism, endonasal antrostomy can hardly be expected to arrest the process.

In favour of the operation it will be noted that the majority of patients report an improvement in general health. This may be due to the "safety valve" action of the naso-antral opening in preventing the bottling up of infections during exacerbations.

Patients who cannot tolerate antral lavage will find it an acceptable alternative, which can be performed under a general anæsthetic; but they should be warned that the operation may fail in as many cases as lavage will fail.

The controversy regarding the damage caused by the radical operation to the developing tooth buds in young children is not settled. Endonasal antrostomy has been performed in many cases in which all the indications except the age of the patient called for the removal of the mucous membrane. McArthur⁽²⁾ has produced a small series of cases in which no damage to the secondary teeth had been found many years after the radical operation. Amies⁽³⁾ is equally convinced that damage is likely to occur; but so far I have found in the literature no cases supporting this view.

Summary.

1. An X ray follow-up in 85 cases in which endonasal antrostomy had been performed is presented.
2. The evidence obtained suggests that: (i) the operation is useless after preliminary lavage has failed; (ii) the operation will not cure gross pathological conditions of the antral mucous membrane; (iii) the operation may be useful as an alternative to repeated lavage by puncture, in cases in which lavage might reasonably be expected to cure.

References.

- ⁽¹⁾ T. G. Millar: "Results of Treatment of Antral Infections", *THE MEDICAL JOURNAL OF AUSTRALIA*, Volume II, October 10, 1936, page 487.
- ⁽²⁾ G. A. D. McArthur: "The Results of Radical Antral Operations in Children", *THE MEDICAL JOURNAL OF AUSTRALIA*, September 18, 1937, page 470.
- ⁽³⁾ A. Amies: "The Results of Radical Antral Operations in Children", *THE MEDICAL JOURNAL OF AUSTRALIA*, October 23, 1937, page 749.

Reports of Cases.

FOUR CASES OF MASTOIDITIS WITHOUT MIDDLE-EAR INVOLVEMENT.

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MASTOIDITIS is almost always secondary to a middle-ear infection. The fact that in these four cases no such primary focus was discovered makes them worthy of publication. The first case occurred in 1933. The other three have occurred during the winter months of 1938. In three cases the infecting organism was a streptococcus, and in one it was the pneumococcus. The aetiology of the course of infection is problematical. It is possibly metastatic, blood-borne; but it is hard to agree to this theory.

Clinical Records.

CASE I.—The first patient, a married woman, aged thirty-seven years, gave the following history. She contracted a chill seven weeks previously. Her temperature rose to 39.4° C. (103° F.) and she noted pain behind the right ear and on the right side of her face. She had also noted transient swelling in the region of the right ear. The face pain diminished after a day or two, and general acute coryzal symptoms occurred. The pain in the right mastoid region had persisted ever since.

Examination revealed slight swelling over the mastoid, but tenderness was present only on very deep pressure.

Both ear drums appeared normal. Hearing tests revealed only a slight diminution of hearing in the right ear by air conduction. There was a positive response to Rinne's test, and Weber's test on the right side.

X ray examination of the mastoid processes revealed a haziness of the right mastoid cells. Immediate operation was advised and agreed to only under pressure, owing to the patient's maternal responsibilities weighing very heavily on her mind.

At operation pus and cell necrosis were found in the whole mastoid process, and in addition an extradural abscess had formed by direct spread to the middle cranial fossa. The cavity was left open to granulate upwards. The middle ear was left alone. Convalescence was uneventful, and in two months hearing tests elicited equal and normal responses.

CASE II.—The second patient, a girl, aged fourteen years, was referred from the country with the following history. Two weeks previously she had had pain in the right ear, of one night's duration. Two days later the pain had recurred and continued. In the last few days tenderness and swelling had appeared over the right mastoid. There was no history of infection of the upper respiratory passages.

Examination revealed a normal drum, but oedema over the mastoid process. Hearing tests revealed only slight diminution of hearing to air conduction. There was a positive response to Rinne's test, but Weber's test gave no information. The patient's temperature was 39.2° C. (102.6° F.). X ray examination of the mastoid revealed breaking-down of the cells on the right side.

At operation the periosteum was adherent to the bone; and towards the tip there was a small area of surface bone discoloration, but no actual sinus. The bone was opened at this site, and the cells at the tip were found to contain pus under pressure and were necrosed. When the bone higher up was cleared the lateral sinus was found to be abnormally placed forwards and superficially, covering the antral area. As the bone beneath this was healthy and infection was apparently confined to the tip of the mastoid, the antrum was not explored.

Convalescence was uneventful and healing rapid.

CASE III.—The third patient, a man, aged twenty-six years, complained of pain in the right ear of three days' duration. He gave a history of having had recurrent middle-ear infections since babyhood. Twelve years previously he had undergone an urgent mastoid operation on the left side while at boarding school. He had also had antral infections satisfactorily treated by irrigations, and his tonsils had been removed.

On examination his temperature and pulse rate were normal. There was tenderness on the tip of the right mastoid. There was no history of infection of the upper part of the respiratory tract. Hearing tests revealed a moderate degree of deafness of the right ear to air conduction. The response to Rinne's test was positive, and bone conduction was slightly prolonged. Weber's test revealed a hearing defect on the infected side. No abnormality nor any trace of infection was found in the nose and throat.

X ray examination revealed cloudiness of the cells of the right mastoid tip, with commencing breaking-down of the cell walls.

The patient was admitted to hospital and treated with sulphanilamide and local application of heat. The symptoms persisted, but without any rise in temperature.

On the seventh day slight swelling was noted at the mastoid tip, but no tenderness was present. At operation, examination of the cells of the mastoid tip revealed grossly thickened mucosa and small pockets of pus. As healthy bone was found superiorly the antrum was not opened.

Convalescence was satisfactory.

CASE IV.—The fourth patient, a boy, aged fourteen years, gave the following history. Two weeks previously he had had pain in the right ear, followed two days later by a slight cold in the head. Discharge from the ear had been present two days previously, when he was sent to hospital.

Examination revealed gross swelling and inflammation of the posterior wall of the right auditory canal, and slight swelling and tenderness over the mastoid process. The drum could not be inspected, but the appearance of the canal suggested a furuncle, although the discharge seemed to be thinner and more profuse. Under ichthyol dressings the swelling subsided, and two days later the appearance of the canal wall suggested a recent furuncle in the middle third posteriorly. The ear drum was normal.

Hearing tests elicited a positive response to Rinne's test and revealed slight impairment of air conduction. Weber's test revealed a hearing defect on the right side. However, increased swelling over the tip of the mastoid process and an indefinite point of fluctuation were present.

X ray examination revealed cloudiness of the mastoid cells.

At operation a small fistula was found near the mastoid tip, with discoloration of the bone. Pus was discharged therefrom under pressure when the periosteum was stripped. The mastoid cells were exenterated and the antrum was exposed, but the antrum itself showed no signs of involvement.

Convalescence proceeded satisfactorily.

In this case I think that the discharge from the ear had found its way through the posterior canal wall in the region of the junction between the bony and cartilaginous portions of the auricular walls.

Discussion.

In Case I and Case IV there was an accompanying coryzal infection. In Case II there was no history of such infection, although the patient was not seen till two weeks after the onset of symptoms. In Case III there were no history nor sign of coryza within three days of the onset. In this case there was a history of repeated previous infections, and it is possible that a dormant focus from the previous infection had become active again in the mastoid. In the other three cases there had been no previous ear infection. It seems impossible for infection to follow the usual canals, via the Eustachian tubes and middle-ear cavity, to the mastoid without giving clinical signs of its progress.

REPORT OF THREE CASES OF ARTIFICIAL RESPIRATION IN ASPHYXIA NEONATORUM BY CATHETER INTUBATION.

By NORMAN E. DAVIS, M.B., Ch.M. (Sydney),
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Case I.

Mrs. B., a *primipara*, had a prolonged labour owing to slow rotation of the infant from a posterior position. Delivery was finally effected by forceps without undue difficulty. The baby was born quite limp, mottled white and mauve, and made no attempt at respiration. Only a flicker of pulse could be felt in the cord. Twenty minutes were spent in attempts at artificial respiration; but air did not appear to enter the lungs. Adrenaline solution (1 in 1,000) was injected into the heart muscle in a dose of 0.3 cubic centimetre (five minims). During this time there had been no attempt at a respiratory gasp, and by now there was no evidence of a heart beat. As a last resource a rubber catheter (size 7) was picked up, and with the left forefinger over the laryngeal aditus the point of the catheter was guided into the larynx and then the catheter was pushed down about two inches into the trachea. The other end of the catheter was then gently blown into; but air escaped between the catheter and the larynx. The left forefinger was therefore introduced again to compress the laryngeal walls against the side of the catheter. Thereupon gentle insufflation produced a full inspiration, while on the cessation of blowing the elastic recoil of lungs and ribs emptied the lungs without the

necessity for pressure. After five minutes a definite cardiac impulse could be seen at the apex. Thirty minutes later the colour was good and the first apparent inspiratory gasp occurred by itself. This gasp was repeated in two minutes and then at intervals, which gradually shortened, until in another hour (that is, roughly two hours after birth) respiration appeared fully enough restored to permit removal of the catheter. The rate of respiration used was about twenty to the minute. Further recovery was normal and uneventful.

Case II.

In Case II the mother was a *primipara*. The foetus presented by the breech and was delivered after a very slow third stage, during which a large amount of meconium was passed. Whilst the head was in the vagina a convulsive movement, suggestive of a gasp, occurred, but no such attempt was repeated after birth. Similar attempts at artificial respiration were made as in Case I, and it was nearly thirty minutes before a catheter was inserted as before, by which time the baby was apparently quite dead. Ten minutes elapsed before a cardiac response was noted in this case, and it was over an hour before the first gasp appeared. The gasps were very slow for the first hour, and the attachment of a carbon dioxide apparatus to the catheter did not appear to affect the inspirations. After about three hours the catheter was removed and respiration continued by itself. In this case the baby's colour was unsatisfactory, and although it took food, it died on the second day following an attack of nystagmus. This was probably a result of intracranial hæmorrhage.

Case III.

Labour was prolonged, the foetus presenting by the breech and the mother being a *primipara*. The baby was born in a state of *asphyxia pallida*, making no attempt at respiration. No heart beat was to be heard or felt. Only about five minutes were spent in ordinary attempts at artificial respiration, and then the catheter was inserted, as in the previous two cases. The colour improved within two minutes, when a cardiac impulse was observed; respiration started about thirty minutes after insufflation was begun. It was again a further hour before respiration became regular enough for the catheter to be removed. This baby made a full and uneventful recovery.

Comment.

None of the women in these cases had received premedication. The three babies all appeared gone beyond recovery, and it was only the extreme anxiety of the parents in Case I to have a living child that made me persist in this case; and, of course, previous experience made me persist in the other two.

Contrary to what one would expect, this means of resuscitation is available to anyone, as, owing to the extreme flaccidity of these babies, the introduction of the catheter into the larynx is a matter of absolute simplicity and does not require the aid of any extraneous apparatus. I found that air always escaped around the catheter unless it was held as described; possibly the use of a larger catheter would obviate this. The amount of blowing necessary to cause a complete inspiration in the baby is surprisingly small (it approximates the effort necessary to blow out a match); consequently one or two hours of this are not in the least tiring, expiration occurring when the operator simply removes his lips from around the catheter. I have had no experience in the administration of "Lobeline" in order to produce an initial inspiratory gasp. In investigations by Wilson Torrey and Johnson¹¹ their procedure, after simple methods have failed, has been to introduce this chemical stimulus through the umbilical vein to induce a voluntary gasp on the part of the baby.

In my cases, or in two of them at any rate, although no obvious gasp has been noted and death had apparently occurred, the direct and continuous introduction of air into the lungs enabled some to be absorbed by some amount of latent circulatory blood, sufficient to revive the circulatory mechanism, and in each case it was only

considerably later than the first apparent autogenous gasp occurred. I state apparent gasp, as I do not know whether such a gasp could have occurred before birth and, if so, whether such a gasp could have produced the opening of the alveoli which is stated by Wilson Torrey and Johnson to be necessary before gaseous interchanges can occur between the lungs and blood.

It is, of course, difficult to get a description of many of these procedures for statistical purposes, as most asphyxiated babies respond to more simple methods of restoration; but I can thoroughly recommend the method described above in any prolonged failure to respond to ordinary methods, as one which needs a minimum of apparatus and which can be carried out in any class of home or hospital.

Reference.

¹ R. A. Wilson, M. A. Torrey and K. Johnson: "The Initiation of Respiration in Asphyxia Neonatorum", *Transactions of the Royal Society of Medicine*, Volume XXX, Number 12, October, 1937, page 1461.

Reviews.

THORACIC SURGERY.

THE position of surgery of the thorax as a specialty is now assured. Today there is no excuse for any doctor who pleads ignorance of its scope and possibilities, for within the last four or five years some excellent books on the subject have appeared, among them "Surgical Diseases of the Chest", by Graham, Singer and Ballou, and "Collapse Therapy of Pulmonary Tuberculosis", by John Alexander. Now we have "Thoracic Surgery", an English version of Sauerbruch's "Die Chirurgie der Brustorgane".¹ This book is undoubtedly a valuable contribution both to medicine and surgery, but some of the chapters suggest scrappiness or haste in writing. For example, the whole subject of tuberculous empyema receives barely a page and a half of treatment. Many will question the dictum that "pneumothorax treatment is not only ineffectual, but actually dangerous in the caseous pneumonic type of pulmonary tuberculosis". Sauerbruch says that phrenic paralysis is never in any sense an alternative to artificial pneumothorax; in this he differs radically from John Alexander and some other thoracic surgeons.

Sauerbruch, like Churchill, of Boston, still prefers ether to the more rapidly acting gases for the production of anaesthesia, and it is possible that we may yet see ether become first favourite again; in the meantime, with most thoracic surgeons it is last. The subject of the division of pleural adhesions in the case of an unsatisfactory artificial pneumothorax is treated too briefly and inadequately to be of any value. The importance of having evidence that fibrosis exists before thoracoplasty is performed is rightly stressed, and at Sauerbruch's clinic no patient is submitted to thoracoplasty if the illness has a duration of less than one year. An old but little known form of treatment is discussed, namely, open drainage of a tuberculous cavity; it is a good operation when the clinical picture is that of chronic lung abscess.

In the section on hydatid disease of the lungs the statement appears that the Casoni intradermal reaction always occurs when a hydatid cyst exists. This is certainly not true in Australia. Describing the treatment of lung abscess, he dismisses bronchoscopic therapy too dogmatically, but this is probably a reaction to

the exaggerated claims of certain endoscopists. He is an unapologetic advocate of surgical drainage of a lung abscess much sooner than most physicians call for it and he insists that it is "adequate drainage" and not "balsams" that control the foul odour of disintegrating lung. Sauerbruch has twice operated successfully on patients suffering from cerebral abscess secondary to pulmonary suppuration; this is encouraging to those who have always found this complication to be fatal. About diaphragmatic hernia the authors say: "The abdominal route may occasionally be employed in approaching wounds of the diaphragm, but in the case of hernia it is not to be recommended." In view of the large and successful experience with the "abdominal approach" by S. W. Harrington, of the Mayo Clinic, this statement needs considerable toning down and modification.

Notwithstanding all these criticisms, this work is a first-class contribution to thoracic surgery.

THE MIDDLE EAR.

THE function and method of stimulation of the muscles of the middle ear have been a subject of conjecture for many years. In "Studies of the Physiology of the Middle Ear" Dr. J. Grandson Byrne describes a series of experiments which in their results appear very largely to elucidate these problems.¹ The work is devoted to a description of experiments which were carried out upon dogs and cats at Fordham University. References to the conclusions of the various earlier workers on the same or similar subjects are made throughout the text. The experiments were made practicable by the devising of an ingeniously counterbalanced mechanism for recording movements of the intact tympanic membrane.

The author's conclusions are interesting in that they demonstrate a threefold stimulatory mechanism. These mechanisms comprise, primarily, a chemical dynamic effector mechanism located in the muscles themselves and apparently activated by the commonly recognized chemical stimulants of the sympathetic and parasympathetic musculature elsewhere; secondly, a chemico-neural mechanism activated by impulses arising in nociceptor and non-nociceptor afferents in the limbs or other parts, which in turn appear to stimulate sympathetic and parasympathetic nuclei in the brain stem; and thirdly, a reflex nervous mechanism induced by sound stimuli. The existence of inherent tonus during the waking state is demonstrated in each of the muscles, while the existence of reciprocal innervation between the *tensor tympani* and *stapedius* muscles would appear also to be proven. The clinical significance of the various findings is discussed, although it is obvious that only time and patient application and observation will reveal the full practical utility of these findings. In the concluding chapters the author discusses the possible pathways concerned in sound perception and the mode of development of auditory phantasms and their resurrection in the interpretation of complex sounds.

The work in its present stage is largely of scientific interest only. The otologist whose mind is given to pondering over the mode of action of those parts with which he has to deal, would certainly find much food for thought in the clear mode in which the experiments are described and interpreted. Confirmation of the findings, of course, remains to be demonstrated by others, although the report is highly convincing. Dr. Byrne is to be congratulated upon the enormous amount of experimental work which he must have had to carry out, on his well-reasoned conclusions, and finally upon the compilation of his report under one cover.

¹ "Thoracic Surgery: A Revised and Abridged Edition of Sauerbruch's *Die Chirurgie der Brustorgane*", by F. Sauerbruch and L. O'Shaughnessy, F.R.C.S.; 1937. London: Edward Arnold and Company. Double demy 8mo, pp. 462, with illustrations. Price: 60s. net.

¹ "Studies on the Physiology of the Middle Ear", by J. G. Byrne, M.A., M.D., LL.D.; 1938. London: H. K. Lewis and Company Limited. Demy 8vo, pp. 304, with 54 illustrations. Price: 13s. net.

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A CHILD LOVER AMONG THE PSYCHOLOGISTS.

CHARLES LUTWIDGE DODGSON, better known to lovers of English literature and to countless thousands of English children by his pen-name of Lewis Carroll, was born near Warrington, in the year 1832. His upbringing seems to have been rather prim; the family was deeply religious, and this fact may have had some bearing on certain phases of Dodgson's later life. After an education at Rugby he entered Christ's College, Oxford, whence, in 1852, he graduated in arts with a first class in mathematics. Nine years later the young man took Holy Orders, and although he wrote and delivered sermons that pleased him, he was no adornment to the pulpit; for he was shy and hesitant in manner and he stammered. But for twenty-six years he was a mathematical lecturer, deeply versed in his subject. He died just forty years ago.

In these forty years the fame of Lewis Carroll has not diminished. True, he was a capable mathe-

matician and wrote treatises on the science, which had a vogue in their day and won him the esteem of his colleagues. But his celebrity does not rest on these. From his pen came two books—to name but two—that have ever since been the joy of all children between the ages of seven and seventy. "Alice's Adventures in Wonderland" and its sequel "Through the Looking Glass", both illustrated by the great Tenniel, were not only nursery but household classics almost from the moment they came hot from the presses. They delighted all Britain. Queen Victoria herself, the story goes, was so charmed with their quaint fancies that she signified her wish to read more and yet more of the author's works; and was later astounded to find herself the owner of volumes bearing such portentous titles as "Plane Algebraical Geometry", "Elementary Treatise on Determinants", "Guide to the Mathematical Student", and "Euclid and his Modern Rivals".

To many readers much we have said is common knowledge. Less well known, perhaps, is the fact that the psychologists in recent months have been sniffing over the grave of the dead-and-gone Carroll. Be it known that Dr. Paul Schilder disapproves both of the man's mental furnishings and of his writings.¹ Carroll, in this critic's view, is a destructive writer, and the world of Alice is a place full of cruelty, slaughter and annihilation. To this psychologist the gentle don was obviously incapable of love, devoid of tenderness, and careless of the existence of others. Obviously, too, his writings prove that Carroll was hag-ridden "by preponderant oral sadistic trends of a cannibalistic character". Worse, he was the victim of other trends—anal trends. A fearful ferocity is the main ingredient of "The Walrus and the Carpenter"; for in that poem crocodiles devour fish, the Queen of Hearts lops off heads, and a lobster is cooked. It is doubtful whether Queen Victoria, chuckling over Alice, fully grasped the horror of these repulsive barbarities and "trends"; for queens have been known to chop off people's heads, and lobsters have been boiled in royal kitchens. And Dr. Schilder finds nothing to praise in Carroll's trick of inventing new, strange

¹ The Journal of Nervous and Mental Disease, February, 1938.

words; he considers that one who is capable of such imaginings as "alithy", "wabe", "mimsy", "gimble" and "Jabberwock" bears upon himself, as plain to see as the lettering of a neon sign, the label of the schizophrenic. Inconsistencies and imbecilities crowd upon each other's heels, it would seem, in the pages of Carroll; spatial relationships are made a mockery, the laws of gravitation are derided, and there are continuous threats to the integrity of the body. Gloomily summing up the whole tragedy, Dr. Schilder suspects that "nonsense literature will originate whenever there are incomplete object relations and a regression to deep layers involving the relation of space and time on the basis of primitive aggressiveness". More courage than most of us possess is needed to refute statements of that kind. But Dr. Schilder puts the query "whether such a literature might not increase destructive attitudes in children beyond a measure which is desirable". A counter-question might well be: "How much destructiveness exactly is desirable in a child?"

Lewis Carroll was a child lover. He told his stories to a small girl and wrote his books for small children. The boon of psychology notwithstanding, the stories of the "schizophrenic" are still a joy to children and adults alike. They are full of whimsical conceits, delicious absurdities and quirks, unforgettable sayings and incidents. A chief sign of their worth is that they have been endlessly plagiarized. Alice has inspired countless caricatures and cartoons, and her adventures may now be read in most modern European tongues. An original manuscript by Carroll was bought ten years ago by a famous American collector for £15,000; it changed hands later for twice that sum.

If we apply accepted psychological tests to the phantasies born of an author's brain, what becomes of Gilbert's "Gentle Alice Brown", the beauteous Italian damsel whose passion for a purple-eyed sorter, whom she ogled from her window as she sat a-catching flies, led to the sorter's death and subsequent dissection? What restraints, what gyves, shall we prescribe for the man who wrote "The Yarn of the Nancy Bell", wherein shipwrecked sailors lick their chops as they feast upon their

shipmates, and the "Story of Prince Agib", which tells our offspring how a Peeping Tom was "collared from behind" and "walloped with a cat"? Should we bury parts of Shakespeare and much of the Bible lest our children become destructive and murderous? Perhaps psychologists, like men of all other callings, sometimes lack a sense of humour. And there is truth in the pithy motto of Marischal College: "They say. Quhat say they? Let thame say."

Current Comment.

CESTRIN IN FACE CREAM.

CESTROGENOUS substances may have definite uses in medicine when properly employed under controlled conditions. They are, however, very potent endocrine substances, and proliferative lesions of various types have been produced in animals through the administration of large doses of oestrogen over long periods. Among these, carcinoma of the breast is the most common, but precancerous and cancerous lesions of the *cervix uteri* have also been produced in this way.

W. U. Gardner, G. Allen, G. M. Smith and L. C. Strong¹ describe a large carcinoma of the *cervix uteri* with metastases in the lumbar lymph nodes, which developed in a mouse following the injection of 10,500 international units of oestradiol benzoate over a period of 319 days. This dosage is several hundred times larger, considered in proportion to the body weight of the mouse, than the highest therapeutic dosage likely to be administered to a human being during a similar period. Nevertheless, the mouse experiment indicates that there is a distinct risk in the administration of oestrogenic substances, even when they are given under the most careful supervision. There is certainly great danger in their uncontrolled use in the so-called "hormone face creams". Carl X. Moore, J. K. Lamar and Naomi Beck, writing in the same number of the journal as Gardner and his collaborators, observe that the readiness with which endocrine substances in oily solution are taken up by the skin has not been sufficiently appreciated. They have found that face cream (stated to contain oestradiol), which is distributed commercially and recommended for the removal of wrinkles, has decided internal effects when applied daily to the skin of laboratory animals. Among these are the stimulation of mammary development in normal male guinea-pigs and the increase of uterine growth in young or mature spayed rats. They emphasize the danger of including such a powerful growth stimulant in face cream

¹ The Journal of the American Medical Association, April 9, 1938.

on the presumption that it is beneficial in removing wrinkles and that all its effects are limited to the skin. A preliminary notice of the authors' work had already appeared in the editorial section of an earlier number of the same journal, the readers of which were advised against the use of a product called "Endocrine", a cosmetic that according to its manufacturers, contained 0.625 milligramme of œstradiol in each ounce. The work of its Council on Pharmacy and Chemistry has enabled the American Medical Association to issue numerous warnings against the use of dangerous proprietary preparations. A caution against the use of "hormone face creams" was certainly needed. These "wonder-working" creams are best sellers; for human nature loves to try to remove its wrinkles and cure its ailments by magic nostrums in jars and bottles. But no face cream will remove the cause of wrinkles. The resolute avoidance of worry and of over-exposure to strong wind and sunshine might delay their appearance for a time. While speaking of sunshine, we might state that the use of œstrin-containing face creams may be dangerous to the skin itself in a country like Australia, where sun-baking is popular and skin cancer is prevalent.

SULPHANILAMIDE IN MENINGOCOCCAL MENINGITIS.

THAT investigation at the bedside of the clinical features and therapy of particular diseases is now possible is evident in a recent report from one of the hospitals controlled by the London County Council. By arrangement all sufferers from meningococcal meningitis applying for admission to any one of the numerous large institutions controlled by the council were admitted to one hospital. In this way H. Stanley Banks was enabled to observe the effects of treatment with meningococcal antiserum and sulphanilamide in various combinations on no less than 113 persons in a time period of less than one year.¹

The largest number (thirty-eight) were treated with serum alone. These patients included some treated more than a year ago, when administration of the serum by the subarachnoid route was a more popular practice. Nowadays it is generally admitted that the intravenous route is sufficiently satisfactory for specific serum therapy. Six deaths occurred in this group. The serum was equally and rapidly effective against type I and type II meningococci. The cerebro-spinal fluid was usually free from organisms within twenty-four hours, but in one-fifth of the cases the meningococci persisted for some days. Banks was impressed by the danger of cisternal puncture, and attributed two deaths to this procedure. An encouraging observation was that benefit was greatest in the youngest (infantile) age group, in which mortality has been held to be

the highest. To fifty-nine patients serum in massive dosage and, in addition, sulphanilamide were administered. The initial dose of antitoxin given was 120 cubic centimetres for an adult and 90 cubic centimetres for a child. The enormous and costly doses often advocated can be greatly reduced if the administration is accompanied by the exhibition of sulphanilamide. Sulphanilamide was preferred to "Proseptasine" and to "Prontosil", because experimental work on mice had shown that it diffused more rapidly than those substances into the cerebro-spinal fluid. E. N. Allott, in a neighbouring communication, gives the results of the analyses of cerebro-spinal fluid for sulphanilamide. He found that great variation occurred in the diffusion rate, but that a satisfactory bactericidal concentration was eventually reached. Banks employed a dose of one gramme of sulphanilamide per 6.3 kilograms (one stone) of body weight, divided into equal four-hourly or six-hourly doses. Infants were found to require and to tolerate no less than thrice this amount. The initial dose was not maintained for more than three days, by which time the organisms had usually disappeared from the spinal fluid. The oral route was used for administration. When patients were unconscious a stomach tube was employed for this purpose. After twenty-four to forty-eight hours of this treatment the concentration of the drug in the cerebro-spinal fluid reached the figure of five milligrammes per hundred cubic centimetres. Mild and harmless cyanosis and skin erythema were often observed. The author states incidentally that this discoloration was not due to methæmoglobinæmia or to sulphæmoglobinæmia, but to some colouring matter attributable to unknown oxidation products of the benzene ring. No damage to the blood picture was observed. There were seven deaths (11.8%) in the series of fifty-nine patients so treated. There were not a few instances of dramatic recovery from coma and delirium to normal cerebration within forty-eight hours.

Sixteen patients admitted almost consecutively were treated with sulphanilamide alone. Fifteen recovered. The number is too small to enable fair comparison to be made with those treated with both serum and sulphanilamide. We hope that the author will continue to make use of his opportunities and experience, so that he may collect a large group of patients treated solely by chemotherapy. As he says, the advisable "first aid treatment" is sulphanilamide by mouth in adequate dosage. Nevertheless, experimental work points definitely towards a combination of this measure with the administration of serum by the intravenous or intraperitoneal route as likely to produce the best results. The drug must be given at an early stage in the illness and continued for some time in gradually decreasing amounts in spite of the existence of cyanosis. This treatment marks a distinct therapeutic advance. The older heroic measures of magnesium sulphate injections, cisternal puncture and spinal lavage appear fortunately to have been displaced for ever.

¹ *The Lancet*, July 2, 1938.

Abstracts from Current Medical Literature.

PÆDIATRICS.

Hypochromic Anæmia of Infants.

RUTH STEPHENSON (*American Journal of Diseases of Children*, June, 1938) reports the results of a study undertaken to determine whether hypochromic anemia was common in so-called normal infants between three months and two years of age, and to determine the form of iron, the size of the dose, and the duration of treatment most effective in correcting the condition. MacKay demonstrated that babies of mothers who had received iron during pregnancy had higher hemoglobin values than the babies of untreated mothers. That the hypochromia present in infants from three or four months to at least two years of age does not accompany optimal health is suggested by MacKay's finding, in a study of artificially fed infants of the type ordinarily found in an infant welfare centre, that even a slight degree of anemia was sufficient to lower their resistance to disease. In recent years attention has been directed to determination of the form in which iron is best given. From a study of the literature it appears that the ideal form of iron in the treatment of infants should meet the following requirements. First, it should be given orally. Apart from factors of discomfort and expense, Heath, Strauss and Castle have shown that adequate doses of iron are toxic when administered parenterally. Secondly, it should be inorganic, since it appears that all iron compounds must be broken down into inorganic salts before the iron can be assimilated. Thirdly, it should be in solution, because the possible deficiency of gastric acidity in an infant might make the solid form unavailable. Lastly, it should be in the ferrous state. Experimental work indicates that ferric iron after reaching the stomach either reacts with proteins to form precipitates which cannot be absorbed, or is reduced to a ferrous compound which can then be absorbed from the intestines. Further, treatment, especially of adults, has shown the superiority of ferrous to ferric iron, though no controlled study is known in which a comparison is made of the efficacy of ferric with that of ferrous iron in the treatment of infants from three months to two years of age. The author has made a study of 64 normal white American-born boys and girls, ranging from three months to two years of age, and living under the same conditions in an institution having good pediatric supervision. Half of the infants were given each day two grammes of iron and ammonium citrate (about 340 milligrammes of metallic iron); the control infants were given each

day 0.4 gramme of ferrous sulphate (about 73 milligrammes of metallic iron). Therapy was continued for three months, the effects being checked by estimations of the number of erythrocytes, the hemoglobin content and the erythrocyte volume. The study confirmed the belief that seemingly normal babies between the ages mentioned had a borderline anemia. It also showed that their hemoglobin levels could be raised to about 14 grammes per 100 cubic centimetres by treatment with adequate iron without added copper. Increases in the number and volume of erythrocytes also occurred, though they were less pronounced. The investigation also showed that ferrous iron produced a maximum effect in much smaller dosage than ferric iron, and that it caused no intestinal disturbance.

Obesity in Children.

ISRAEL BRAM (*Archives of Pediatrics*, June, 1938) discusses obesity in the growing child and its treatment. He points out that unless proper treatment is instituted before the tenth or twelfth year it may become a lifelong impediment to health. The division of obesity into endogenous or glandular and exogenous types is still useful in children as well as in adults, although it must not be overlooked that in the majority of cases these types are not clearly defined. The apparently endogenous obesity in the child may be divided into two types. The first is the variety in which there is deficient thyroid secretion, occasionally to the point of submyxedema. Often the patient presents a thyroid hypertrophy or colloid goitre, occasioned by a physiological maladjustment to the demands of the developing being. This appears most often as a premenstrual swelling. The other endogenous type is seen in Fröhlich's syndrome, in which an associated thyroid deficiency is secondary to underaction of the anterior lobe of the pituitary gland. There is ample evidence for the belief that in all endogenous cases of obesity both the thyroid and the anterior pituitary lobe are involved. The judicious administration of thyroid substance as a therapeutic test in all endogenous cases yields far better results than the use, alone, of anterior pituitary substance, even in typical *dystrophia adiposo-genitalis*. The author insists that in the great majority of fat children the obesity is transient if therapy is expertly instituted at the proper time. Food reduction must be adopted in nearly all cases. Not only must the quantity of food be materially curtailed, but the quality must likewise be modified, more particularly in regard to fats and starches. The most valuable therapeutic agent is desiccated thyroid. Generally speaking, it is safest to begin with minimal doses of 0.0015 to 0.003 gramme, gradually increased during a period of a few weeks to 0.06 to 0.12 gramme two or three

times a day. Contraindications to its use are symptoms of Graves's disease, rapidity of the heart beat, organic heart disease, pyrexia, diabetes, tuberculosis and other wasting diseases. All patients taking thyroid substance should undergo frequent metabolic tests as a guide to therapeutics. In cases presenting clear-cut evidence of pituitary deficiency, as observed in Fröhlich's syndrome, thyroid medication may be supplemented by injections of anterior pituitary substance, in doses of one to two cubic centimetres. To begin with, an injection may be given every other day over a period of two or three weeks, at the end of which time the frequency of injections is gradually reduced to twice a week, then to once a week, until after the second month. One cubic centimetre may be given once a week for a further month or two; the treatment is then discontinued.

Rheumatic Erythema Nodosum.

ARVID WALLGREN (*American Journal of Diseases of Children*, May, 1938) recalls MacKenzie's conception that *erythema nodosum* is a manifestation of rheumatism, an opinion that was prevalent in England for at least two or three decades. During the last fifteen or twenty years the theory of a rheumatic cause has lost ground proportionately as the evidence has become more and more convincing that *erythema nodosum* is, as a rule, caused by tuberculosis. It is now fairly generally held by pediatricians in Scandinavia that tuberculosis is the cause of this condition in from 75% to 100% of children afflicted. This view seems to be shared by a number of pediatricians in the United States of America and in England. However, investigators have been disinclined to give up the idea that in certain cases there may exist a connexion between *erythema nodosum* and rheumatic fever, even when they are convinced that in general *erythema nodosum* rests on a tuberculous basis. Rheumatic *erythema nodosum* should in the first place be sought among those who fail to react to tuberculin. To prove that *erythema nodosum* is due to rheumatic fever when a tuberculous infection is present at the same time is hardly possible, considering the connexion that has been shown to exist between tuberculosis and *erythema nodosum*. The author gives the case records of a boy, aged eleven years, who fell ill with fever and *erythema nodosum*. Examination of the lungs revealed no abnormality and the tuberculin tests elicited no response. In addition there were pains in the joints, an endocardial lesion established by physical examination, an electrocardiographically demonstrated myocardial lesion, an increased red cell sedimentation rate, a period of fever in connexion with the eruption, and an absence of any other demonstrable cause of the *erythema nodosum*. This case appears to prove the correctness of MacKenzie's view that acute rheumatic fever may

give rise to *erythema nodosum*. On the other hand, the rarity of such a case (one in eight hundred observed cases of this disease) indicates that MacKenzie was in error when he stated that the condition was frequently rheumatic. Evidently acute rheumatic fever can be classified among the non-tuberculous diseases capable of producing *erythema nodosum*.

ORTHOPÆDIC SURGERY.

Fat Embolism.

CARLO SOUDERI (*Archives of Surgery*, April, 1938) reviews the literature and presents results of some experimental work on fat embolism. He points out that the condition is not an embolism in the sense of permanent occlusion of the vessels, but is simply a retardation of the flow of blood through a capillary while the droplets of oil become elongated and are slowly forced from the arterial to the venous side of the circulation. Most of the discussion of fat embolism in modern text-books is based on the statements and conclusions of Scriba, in 1880; but subsequent experience has shown that some of these were erroneous. Lehman and Moore, in 1927, concluded that fat embolism could be readily produced in the bone marrow on a non-traumatic basis by the absorption into the blood stream of histamine from injured tissue, the histamine acting as a disintegrator of the emulsified fat of the blood stream. Intravenous injections of ether produce fat embolism of the lungs by dissolving the normal emulsified fat. Fat embolism is rare in children, whose blood is said to contain more of the viscous palmitin and stearin and less of the more fluid olein. The present opinion is that more of the fat is carried by the veins and a smaller part by the lymphatics. Repeated small injections of fat will enable laboratory animals to withstand many times the lethal dose without evidence of free droplets in the blood serum. Gauss considers that fat embolism is more common with fractures than with any other condition. This is because the veins are enclosed in bony walls, and fat, which has been liberated by injury, is enabled to be sucked into the veins. Fat embolism was observed by Wright in 52 out of 100 consecutive *post mortem* examinations performed on patients, the majority of whom had not suffered from injuries. It also has been observed in 22% of cases of cardio-vascular and renal disease, and in 44% of cases of burns. The symptoms may come on suddenly, within a few hours of injury. Usually they occur on the third or fourth day, and have a tendency to be cyclic, the cycle corresponding to the passage of emboli from the pulmonary to the systemic circulation and their gradual return. Mental excitability, sometimes verging on mania, dyspnoea, cyanosis,

hyperpyrexia and tachycardia may lead to a diagnosis of bronchopneumonia. In the majority of cases the condition is either so mild that it does not cause symptoms, or so severe that death results in a few days. Confirmatory signs are the presence of fat in the urine, fat emboli in the retinal vessels, and petechial hæmorrhages in the skin of the chest, shoulders and neck, the last-named site being rare. When the urine is examined for fat, errors will be avoided if it is remembered that fat will be present, if at all, in the last few cubic centimetres only, owing to the fact that it floats on the urine. Many lines of treatment for fat embolism have been suggested, including drainage of the thoracic duct, venesection and intravenous injections of physiological salt solution; but none has scientific support. The injection of pituitary extract, "Coramine", morphine and caffeine has been shown clinically and experimentally to produce a steady fall in the quantity of fat in the blood. Quantitative determinations of fat in the blood, even when performed in well-equipped laboratories by properly trained persons, yield results with so many variations that they are of no diagnostic value. It is not the total fat content of the blood, but the state in which this fat occurs, that produces fat embolism. The occlusion of the vessels is caused by the corpuscular fat; but as this is only 5% of the total fat content of the blood (400 milligrammes per 100 cubic centimetres), it is so small that quantitative methods are valueless. Spectroscopic methods fail for a similar reason. Detection of fat in the urine may be successful if the technical point mentioned above is remembered; but the technique requires much care. Röntgenograms of the lung will reveal characteristic changes if sufficient intravascular droplets of fat are present.

Spondylolisthesis.

KELLOGG SPEED (*Archives of Surgery*, August, 1938) states that spondylolisthesis is defined as a "deformity in which by the action of the weight of the trunk, the body of the fifth lumbar vertebra and the portion of the spine above it slip forward over the base of the sacrum". In true spondylolisthesis the arch of the fifth or other lumbar vertebra does not slip forward with the body. Where the whole vertebra is dislocated forwards the condition is a pseudo-spondylolisthesis. The separation of the neural arch or its isthmus may be due to trauma, usually a shearing strain resulting in fracture, or to anomalies of developments in the laminae or isthmus (that is, the inter-articular part of the neural arch), but is generally a failure of bony fusion. The separation of the arch may more rarely be due to inflammatory processes. Brailsford found five instances of spondylolisthesis in Röntgen examination of 3,000 patients. The ages of these patients varied from thirteen to

thirty-five years. Hibbs and Swift operated upon twenty-three patients whose ages varied from fifteen to fifty-one years. The forward displacement of the fifth lumbar vertebra varied from 0.63 centimetre to the full width of the body. Fifteen patients were men and eight were women. There was a history of trauma in 47.8%. Some separations of the isthmus may represent fractures sustained in childhood, unrecognized until strain in adult life produces symptoms following either a slow or sudden slipping forward of the vertebra. Active support from the spinal muscles and ligaments is a factor in preventing slipping. Weakness of one side of the neural arch may favour easy fracture of the opposite side, but usually the bony defect is bilateral. Diagnosis depends on the symptoms of pain sometimes referred down both thighs and buttocks, stiffness in the back, shortening of the spine and a crease across the back at the level of the iliac crest; but it depends chiefly on radiographic examination. The fifth lumbar vertebra is usually involved alone. Occasionally the fourth may be involved with it or may be the only vertebra affected. Lesions in the cervical and dorsal regions have been recorded. In many instances spondylolisthesis may be symptomless until aggravated by trauma. Treatment may be palliative or curative. The former consists in traction on head and feet in a recumbent position, the legs being elevated to form an angle of 35° to 40° with the torso. If reduction in whole or part is obtained, a double plaster spica extending from the axillae to include both legs is applied for a period of six to eight weeks. A steel back support is used afterwards. For curative treatment posterior spinal fusion by the method of Hibbs or Albee has been performed. Mathieu and Demirleau have advised an extensive osteosynthesis of the anterior segments of the lumbar vertebrae with the ilium by means of grafts from sacrum to ilium and lumbar vertebra to ilium combined with intervertebral grafts. Chandler recommended trisacral fusion, performed from the posterior aspect of the spine. In 1932 Capener suggested that the ideal fixation of the spine would be one fixing the body of the fifth lumbar vertebra to the sacrum. In 1936 Jenkins described the insertion of a graft from the anterior surface of the fifth lumbar vertebra into the sacrum through an abdominal incision. In 1936 Mercer described an osteotomy of the lumbo-sacral junction through an anterior abdominal approach and the insertion of a two-piece bone graft obtained from the patient's ilium. Hyperextension after operation was prevented by the use of a plaster of Paris shell, in which the patient lay during operation. The presence of *spina bifida occulta* in 20% of cases is an additional argument for the anterior bone graft. Mercer describes the procedure followed in a case of his own.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on July 28, 1938, at the Robert H. Todd Assembly Hall, British Medical Association House, 135 Macquarie Street, Sydney, Dr. B. T. Evers, the President, in the chair.

Mental Disorders Associated with Childbirth.

Dr. J. McGeorge read a paper entitled "Mental Disorder and Childbirth" (see page 671).

Dr. H. B. Williams read a paper entitled "Mental and Nervous Disease Associated with Childbirth" (see page 677).

Dr. A. J. Gibson expressed his appreciation of the papers. He said that mental disorder associated with childbirth, in its more serious manifestations, was not very frequently seen in Australia. Minor manifestations were seen fairly frequently. Much attention should be paid to the family history of obstetric patients. If there was a history of mental instability in the family and if the patient had difficulties to overcome, such as toxemia, a difficult labour, or sepsis during the puerperium, mental trouble was likely to occur. Dr. Gibson had had one patient who gave him trouble. She had premature rupture of the membranes and the position of the fetus was persistent occipito-posterior. The patient was delivered only by the performance of craniotomy. A few days afterwards her whole disposition changed; she became very voluble, whereas formerly information had had to be dragged out of her. A search in her history revealed that she had been present at the confinement of her sister, who had had a severe post partum hæmorrhage. The sister had nearly died, and the patient had been the only one with her. Dr. Gibson had later found out that there was a family history of mental disorder. The patient finally recovered after about seven months; but she had no more children. Dr. Gibson quoted another case to illustrate the necessity for parents to treat children well. He had recently been called to see an elderly primipara who had been about three days in labour. Premature rupture of the membranes, *et cetera*, had occurred. The head was high in the pelvis and there was very little dilatation. He thought that the only way to deliver her of a live child was by Cesarean section. This operation was duly performed. The patient had a stormy convalescence, but recovered. She went to see him a few months later, complaining of "funny feelings" in the head, and a feeling that some day she might kill the child. She was the fourth daughter of poor parents of rather ignorant type, and had been brought up in England. The parents had wanted a son, and as she was a daughter she was not wanted and her childhood was made miserable on that account. She had to work very hard in her teens. Finally, when she had almost abandoned hope of a happier life, she was proposed to. She had great trouble during pregnancy, and nearly died in labour, and the baby was a boy. She recovered when the meaning of her feelings towards the child was explained to her.

DAME CONSTANCE D'ARCY also thanked the speakers. She said that there was nothing new to be told about the subject under discussion, since the position was much the same as when the present speakers were students. The addresses given that evening would be of great benefit because they gave such a good description of the condition. Dame Constance had never encountered a case of puerperal insanity in her private practice, but she had come across them in the large maternity hospital to which she was attached. There was a lesson to be learned from this fact; the wives met with in private practice were carefully selected. If this selection could be carried out in the poorer classes, some happier results might accrue. Dame Constance was particularly grateful to Dr. McGeorge for his unequivocal declaration about the question of termination of pregnancy in these conditions. Another psychiatrist a year earlier had said the same thing. Sometimes the

question had to be discussed with the patient's relatives. They felt that, if the baby was the cause of her insanity, the right thing to do was to get rid of the baby and the patient would be better. It was hard to make them realise that such an action would only make the patient worse. Dame Constance had become impressed with the fact that obstetricians should be as patient as possible, and hesitate before sending these women to an institution where they would be certified as insane. The practice at the Royal Hospital for Women was to send them to the Reception House; but if the nursing staff was patient and forbearing, and could give the patients enough attention to prevent them from carrying out their suicidal and homicidal tendencies, the patients often recovered. Dame Constance said that this was what she did in her hospital practice. It was the same in the treatment of eclampsia; nearly all these patients severely ill with eclampsia became excitable and even violent in the stage of recovery. If the nursing staff grew worn out and tired, it was Dame Constance's practice to advise that the relatives should go and sit by the patient and restrain her. These people were the first to complain at the nursing staff if they were not about when the patient tried to get out of bed and run away.

Dr. Williams had spoken of several matters that she had hardly expected to be included in the evening's discussion, for example, chorea and polyneuritis. Dame Constance said that she had published the report of a case of polyneuritis some years previously. This had been regarded as beriberi, and the physician who saw the patient with Dame Constance thought so, too. The patient had suffered from hyperemesis for five months and had been fed on very poor milk for six months, as it was a time of drought. The patient recovered, and after six months walked out of hospital. The illness of a second patient had been diagnosed as pellagra, but the consultants would not agree to this diagnosis. The patient had a bilateral symmetrical rash of roseate colour. Dame Constance had had to give in, as the weight of opinion was against her diagnosis. However, when the patient was given sufficient vitamins, she recovered. Dame Constance said that she had yet to be convinced that the condition had not been due to vitamin deficiency. Dame Constance recalled the case of a young wife, in the early months of pregnancy, who in childhood had been greatly frightened by a violent storm and had later suffered from chorea. In hospital she had had a violent attack of chorea, which Dame Constance could not control. A psychiatrist, however, got her under control by interesting her in a bunch of keys. She became quiet, when before she had been violent. Drugs had had no apparent effect. Dame Constance once more commended the remarks that Dr. McGeorge had made about the termination of pregnancy. The thing to do was what was right, and not what was expedient.

Dr. W. S. Dawson said that if delirium and transitory mental disturbances were to be included, confusional states would be the most common mental disturbances of the puerperium. He agreed with the views expressed by Dame Constance D'Arcy, and asked whether it would not be better to make provision in lying-in hospitals for the handling of these patients. A small annexe where they could be kept and observed might be of very great assistance, and might help in avoiding the Reception House and, later, certification. There was also need for a few nurses with special experience who could handle these patients with patience and calmness. Dr. McGeorge had referred to Graves's work on the toxic causation of this form of insanity. He said that anyone who had read his monograph on toxic conditions, published about three years before, would be doubtful about his diagnosis of septic conditions. Graves had discovered a great number of unhealthy nasal sinuses.

Where there was an outstanding physical factor, such as a toxic condition or an abnormality of labour, the tendency to recurrence in later pregnancies was very small, providing that there had been a good physical recovery. The relation of mental disorders to childbirth was very perplexing.

Dr. Dawson then referred to interruption of pregnancy as a therapeutic measure. He said that he had been struck by the number of patients of a manic depressive type who had had attacks associated with pregnancy or the puerperium,

and who had gone on with subsequent pregnancies without mental abnormality. He quoted the case of a woman who suffered from manic depressive paroxysms and who had had several children. On one occasion she became pregnant towards the end of one of these phases; but she passed through pregnancy and labour without mental relapse. Then, later, she had an attack unassociated with pregnancy. Dr. Dawson was glad of the conservative attitude of the speakers. Interference in these cases was hardly ever warranted, and a conservative attitude was right.

Dr. Dawson said that he was pained at Dr. Williams's confession of ignorance of psychiatry; he expressed the hope that later graduates were in a better position. Referring to polyneuritis, Dr. Dawson said that the early and intensive exhibition of vitamin B₁ often arrested the condition.

DR. OLIVER LATHAM said that he had been much interested in the remarks of Dr. Williams and Dame Constance D'Arcy concerning multiple neuritis as a rare complication of the puerperium. Dame Constance had described patients who had also exhibited skin rashes almost certainly pointing to pellagra. One of the pathological lesions of pellagra was a spinal cord picture resembling combined sclerosis. A paraffin section of such a cord, stained with hæmatoxylin and eosin, had been handed to Dr. Latham by Dr. A. H. Tebbutt. It had been obtained from a puerperal patient who had had neurological signs of paralysis *et cetera*. The demyelination in the posterior tracts was conspicuous. Probably much more would have been revealed had pieces of cord and nerves been submitted in 10% formalin solution. Sometimes the main lesions of a neuritis were spinal.

DR. CEDRIC SWANTON said that he wished the speakers had had time to discuss the minor psychological conditions which were of such vast importance to the health of the community. He referred particularly to the difficulties of breast feeding. Most of these were psychologically determined, and were precipitated by the mother's early child-parent relationship. Dr. Swanton would also have liked to hear a discussion of those extremely common chronic anxiety states so often associated with a young mother's difficulty in adjusting herself to her motherhood. He referred to the type of woman who had "never been well since little Johnny was born", who suffered from general fatigue and all sorts of minor pelvic disorders, and who was apt to fall victim to the enthusiasm of the gynecological surgeon. Much could be done actively for these people, which was not so in cases of more serious psychiatric disorders. The latter simply called for diagnosis and disposal.

DR. D. W. H. ARNOTT said that both papers had been interesting and entertaining. Glandular upset was the important factor in pregnancy. This took its toll of the nervous system, and greatly lowered the nervous reserve and the mental and physical capacity of pregnant women. He referred to the possibility of prevention of mental disorders. Dr. Arnott considered that it should be possible to formulate a régime to protect the health of women in pregnancy. They should have adequate rest and sleep and freedom from all household duties if possible. The danger signals of nervous exhaustion were depression and insomnia. The woman should be trained so as not to fear labour, and during the last week should have almost complete rest. The actual labour should be made as painless as possible, and the means of controlling *post partum* hemorrhage should be always at hand. No visitors should be allowed in the first week of the puerperium. The obstetrician himself should ask the patient whether she was having sufficient sleep. Sometimes these patients were awakened early to be washed, and were afraid to tell their medical attendant how they felt in the presence of the matron or nurses. During the first three to six months after confinement their household duties should be greatly reduced. Dr. Arnott spoke of the need for some means of providing assistance in the home for these women for three or four months before and after confinement.

DR. S. DEVENISH MEARES said that he was particularly interested in reproductive insanity and considered that these disorders of pregnancy and those of the menopause had many characteristics in common. He wondered what

part endocrine disturbances played. At the menopause and after labour there was a great drop in the level of oestrin in the blood. In this connexion it would be interesting to know whether the patients referred to had all suffered from long periods of amenorrhoea following their confinements, and whether there had been any disturbances of menstrual rhythm previous to conception. It might be interesting to try the effect of the administration of oestrin in a series of cases of reproductive insanity.

DR. J. A. L. WALLACE commented upon the hospital care of certain patients. He said that the Lunacy Act provided for the certification of such patients as "Request" admissions. This was a useful means of placing the patient directly under care in a mental hospital without the necessity of passing through the Reception House. In this way all the necessary formality of the Lunacy Court proceedings at the Reception House was avoided; although in some cases the magistrate at the Reception House might visit a sick person in the Reception House wards without requiring the patient to be brought into court. Certain patients could be admitted as voluntary patients to the Psychiatric Clinic, Broughton Hall, providing they were well enough to sign voluntary admission forms. Dr. Wallace agreed with Dr. Dawson that a special annexe to maternity hospitals should be provided for the care of patients suffering from what might be only transient mental abnormalities. This would be of very great advantage.

Dr. Wallace's second point was the association of puerperal mental abnormalities with schizophrenia (*dementia præcox*). It was said that marriage was relatively infrequent among schizophrenics. This might be so; but schizophrenia often developed during pregnancy and the puerperium. In such cases it was not wise to give too favourable a prognosis. Dr. Wallace concluded by expressing his appreciation of the interesting discussion of an important subject.

DR. E. HASLETT FRAZER spoke of prevention. One speaker had said that most forms of insanity in pregnancy were anxiety states. These adult mental abnormalities in pregnancy were really extensions of childhood anxiety states. It was possible that if adequate sex instruction was given to children in their earlier years, when they asked for it, a great deal of the later disturbances would be avoided. This question had been dealt with in various parts of the world. Dame Constance D'Arcy had spoken of "hand-picked" mothers. This was the ideal, and Dr. Haslett Frazer had a bias in favour of eugenics, and thought that some form of selection would have to be adopted eventually. Speaking of the termination of pregnancy, Dr. Haslett Frazer said that no one advocated this unless it was necessary; but, at the same time, not one speaker present had taken into account the deleterious effect of a neurotic mother on the developing mind of her child. Dr. Haslett Frazer wondered why a psychosis occurring early in pregnancy should be dealt with more easily than a psychosis manifesting itself later. Since the psychosis was a response to an inner conflict over pregnancy, it might reasonably be expected that there should be some relief after the parturition. Actually there was not, though he did not know why. He thought it might be due to some associated endocrine disturbance.

DR. B. T. EBYE, from the chair, said that very useful material had been provided for the man in general practice who had to deal with obstetrics. He hoped that the suggestions made by Dr. Wallace and Dr. Dawson might not fall on deaf ears, but be turned to good account.

DR. McGeorge, in reply to Dame Constance D'Arcy's remarks on eugenic selection, said that it was very important. There was more to be said in its favour than in favour of contraception, sterilization and segregation. Dr. Gibson had referred to the influence of the family history. Somewhere between 40% and 60% of patients suffering from insanities of childbirth had a family history of mental disorders. The environmental factor probably also played a great part. The upbringing of children in their earlier years might very seriously influence their attitude towards normal events like pregnancy. Dr. McGeorge would like to see psychiatric work in obstetric hospitals. Many patients could be tided over their short

period of mental disorder. Dr. Swanton had mentioned the neurotic manifestations, for which certification was not required. Dr. McGeorge would have liked to go more fully into them. He agreed with Dr. Arnott that some glandular influence was at work. It was a common belief among women that amenorrhoea was a cause of insanity. In reply to Dr. Haslett Fraser's remarks, Dr. McGeorge said that only time could solve the problem of eugenic selection. The environmental factor was important. Children should be educated to realize that the fulfilment of sexual life was something to be looked forward to without fear and without shame, as an ordinary physiological process. Dr. McGeorge said that the reason that a psychosis of pregnancy was more easily dealt with in the early months was that toxic and exhaustive factors were not so pronounced.

Dr. Williams, in reply, said that he agreed with Dr. Gibson that it was most important to take a correct history. If this was done more fully and if the patient's confidence was won, then early symptoms were more likely to be noticed. Then, if the task was too much for the obstetrician, a psychiatrist could be called in. Dr. Williams agreed with Dr. Dawson that suitable units should be attached to obstetric hospitals. Often these patients became unmanageable, and could not be kept in the wards. They were sent to the Reception House, then back to the hospital for their confinement, and then back to the Reception House. Many of these mental states could be prevented by care during pregnancy and labour. Dr. Williams stressed the necessity for prevention of trauma and of hæmorrhage.

MEDICO-POLITICAL.

ANNUAL MEETING OF THE DELEGATES OF THE AFFILIATED LOCAL ASSOCIATIONS OF MEMBERS WITH THE COUNCIL OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

The annual meeting of delegates of the local associations affiliated with the New South Wales Branch of the British Medical Association was held at the William Henry Crago Council Room, British Medical Association House, 135, Macquarie Street, Sydney, on September 30, 1938. Dr. B. T. Edye, the President, in the chair.

The following delegates from local associations were present: Dr. R. A. Robertson (Border Medical Association), Dr. L. Abramovich (Canterbury-Bankstown Medical Association), Dr. A. T. Roberts (Central Northern Medical Association), Dr. R. O. Williams (Central Southern Medical Association), Dr. G. N. M. Aitkens (Central Western Medical Association), Dr. A. M. Gledden (City Medical Association), Dr. B. W. Stevenson (Eastern Suburbs Medical Association), Dr. K. S. Jones (Far South Coast and Tablelands Medical Association), Dr. G. F. L. Elliott (Illawarra Suburbs Medical Association), Dr. W. L. Kirkwood (Kuring-gai District Medical Association), Dr. R. J. Jackson (Northern District Medical Association), Dr. J. R. Ryan (North-Eastern Medical Association), Dr. Ralph Skinner (Southern District Medical Association), Dr. A. L. Caselberg (South-Eastern Medical Association), Dr. G. Cummins (South Sydney Medical Association), Dr. R. V. Bretherton (Warringah District Medical Association), Dr. K. C. Rawle (Western Medical Association), Dr. R. F. Back (Western Suburbs Medical Association).

The following members of the Council of the New South Wales Branch were present: Dr. G. M. Barron, Dr. G. Bell, Sir Charles Blackburn, Dr. K. S. M. Brown, Dr. A. M. Davidson, Dr. H. R. R. Grieve, Dr. P. L. Hipsley, Professor W. K. Inglis, Dr. A. A. Palmer, Dr. W. F. Simmons, Dr. A. C. Thomas, Dr. E. A. Tivey, Dr. R. C. Traill, Dr. W. Vickers, Dr. A. S. Walker, Dr. G. C. Willecks.

Dr. J. G. Hunter (Medical Secretary) and Dr. H. Hunter (Assistant Medical Secretary) were present.

The Editor of THE MEDICAL JOURNAL OF AUSTRALIA was represented by Dr. Beatrix Durie.

Welcome of Delegates.

Dr. B. T. Edye, the President, welcomed the delegates in a brief speech. He pointed out in conclusion that voting at the meeting would be by delegates only.

Levy on Members.

Dr. R. J. Jackson (Northern District Medical Association) mentioned that he had seen no reference to a resolution carried at the last annual meeting, namely:

That this meeting of delegates suggest to the council that the time has arrived to make a levy of 10s. per member per year, such levy to be directed to the work of the Federal Council.

Dr. George Bell drew attention to By-Law 15, Section iii, of the Memorandum and Articles of Association and By-Laws of the Federal Council of the British Medical Association in Australia. This is as follows:

To meet the general and other expenses of the Federal Council the Treasurer of each Branch shall pay to the Federal Council such sum or sums as the Federal Council may require, provided that the total so payable in any year shall not exceed a sum equal to two shillings per member of the Branch.

Dr. Bell pointed out that the Federal Council could not require the Branch to pay more than 2s. per annum per member. He thought that a sum of 10s. was the minimum requirement. The Federal Council would require the approval of the Branch councils for an increase in the rate. The matter was being considered by the Federal Council.

Admission of Patients to Hospital.

Dr. B. W. Stevenson said that a motion concerning the admission into hospital of urgently sick people had been carried at the last annual meeting of delegates; but the council had not approved of it at the last quarterly meeting. Dr. Dickie had drawn attention to the fact that in England they had started a service which was tantamount to "one telephone call, one bed", whereby a doctor, by ringing up, could get a patient into hospital. Dr. Stevenson thought that the council should not shelve the matter.

Dr. Hugh Hunter said that he knew that Dr. John Hunter had interviewed the Hospitals Commission on the matter. He gave the views of the Hospitals Commission.

Workers' Compensation.

Fees for Skiograms.

It was resolved, on the motion of Dr. K. S. M. Brown (in the absence of Dr. W. F. Simmons), seconded by Dr. R. C. Traill:

That consideration be given to the question of fees for skiograms of injured workers.

Dr. Hugh Hunter, Dr. R. J. Jackson and Dr. R. Skinner took part in the discussion.

It was moved by Dr. R. Skinner and seconded by Dr. G. N. M. Aitkens:

That a committee of the council be appointed to approach insurance companies on this matter and that a fee of one guinea for interpretation in respect of workers' compensation cases in district hospitals be prescribed.

It was resolved, by way of amendment, on the motion of Dr. G. F. L. Elliott, seconded by Dr. R. V. Bretherton:

That the matter be left in the hands of the council to take up with the workers' compensation authorities.

Dr. R. F. Back and Dr. R. J. Jackson took part in the discussion.

Mileage Fees in Private Practice.

It was resolved, on the motion of Dr. K. S. M. Brown (in the absence of Dr. W. F. Simmons), seconded by Dr. R. C. Traill:

That consideration be given to the question of charges for mileage, in private practice.

It was resolved, on the motion of Dr. R. J. Jackson, seconded by Dr. K. C. Rawle:

That the question of mileage charges in private practice be deferred until the 1939 annual meeting of delegates with the council.

Dr. Jackson said that he felt that the time was inopportune for discussing such a matter.

Dr. G. N. M. Aitkens and Dr. Hugh Hunter took part in the discussion.

Constitution of the Council.

It was moved by Dr. R. O. Williams, seconded by Dr. W. L. Kirkwood:

That the British Medical Association Council be requested to appoint a special committee for the express purpose of devising suitable machinery for the adequate representation of general practitioners in the councils of the British Medical Association.

Dr. Williams said that he wished, on behalf of his local association, to assure the council of the Branch of its loyalty. There was not one member of the Central Southern Medical Association who was not fundamentally loyal to the British Medical Association. At the same time the Central Southern Medical Association saw many weaknesses in the armour.

Dr. R. J. Jackson said that the members of the Northern District Medical Association had discussed this matter carefully and that they were satisfied that the present position could scarcely be improved.

Dr. E. A. Tivey said that the Council of the New South Wales Branch at the moment consisted of nine general practitioners and eleven non-general practitioners, and of those eleven, three or four had been in general practice. He thought that the general practitioners were adequately represented.

Dr. K. C. Rawle said that although Dr. Williams's idea was good and the thought behind it was sound, it was a fact that the machinery for bringing about his suggestion was at present in the hands of the practitioners themselves. They had the voting power and could bring it into effect at the next elections if they wished to.

Dr. B. W. Stevenson said that he had been instructed to say that his association was satisfied that there were enough general practitioners on the council. He thought that the local associations ought to be strengthened by making every member of the British Medical Association a member of a local association. It would be for the main body then to collect the fees each year and to give a grant to the local associations.

Dr. Williams, in reply, said that the proposals suggested by his association were that the whole State should be divided into a number of medical electorates: six city and six country. As far as the general practitioners were concerned, further representation was considered advisable in respect of specialized sections of medicine, and it was considered that each electorate should have the right to be represented by one member on the central council, such representative to be elected by ballot in each electorate and to be a general practitioner residing and practising in the electorate; and further, that a central fund should be established to provide allowances to country members for travelling expenses and loss of time.

The motion was not carried.

"The Medical Journal of Australia."**Control of "The Medical Journal of Australia".**

It was moved by Dr. K. C. Rawle, seconded by Dr. R. Skinner:

That the State Branches take over financial control of THE MEDICAL JOURNAL OF AUSTRALIA and make it our official organ.

Dr. Rawle said that it had astounded many of the members of the Western Medical Association to learn that THE MEDICAL JOURNAL OF AUSTRALIA was not an official organ. They felt that, although *The British Medical Journal* was the official organ, it was so far removed from them that it was official in title only. It served no useful purpose for announcements, and this suggestion was put forward because it was thought that the Federal Council should have more say in the control of THE MEDICAL JOURNAL OF AUSTRALIA.

Dr. A. M. Davidson said that many members of the Association and even those in charge of local associations were in ignorance of the constitution of THE MEDICAL JOURNAL OF AUSTRALIA and of the publishing company. It was a long story, that ran back twenty-one years. It had to be remembered that the journal was a Commonwealth affair and not a New South Wales affair. Its management was in the hands of a board of directors, of which two were from Sydney, and of the rest, one from each State. The question of publication of leading articles which had given rise to differences of opinion and annoyance amongst members was one that had given the directors cause for thought from time to time. It was difficult to think of a better method than the present one. The position was that the journal was bound to publish material supplied to it by the Federal Council on Federal matters, and by any State council on State matters. That had always been done, and there was no reason to blame the Editor or the management for anything that had appeared, because it had all been supplied from those sources. THE MEDICAL JOURNAL OF AUSTRALIA had published only matters supplied to it officially, and this the directors considered was the proper policy to adopt. Hot air and extravagant writing would not do the cause any good.

Dr. Davidson said that the fact that the journal was not an official organ came about purely as a matter of legal technicality. If the journal was the official organ of the British Medical Association and it labelled somebody, then the British Medical Association had to pay; if it was THE MEDICAL JOURNAL OF AUSTRALIA simply, then THE MEDICAL JOURNAL OF AUSTRALIA had to pay.

In regard to the financial aspect, Dr. Davidson mentioned that the founders of the publishing company had drawn the articles so carefully that those who happened to be debenture holders and had supplied the money to enable the journal to be printed cheaply, had no say whatever in the running or the management; they were merely people who had lent money. The Branch Councils had the say, and they elected members of the publishing company.

Dr. R. A. Robertson also spoke.

Having heard Dr. Davidson's explanation, Dr. Rawle, with the consent of the seconder, Dr. R. Skinner, withdrew the motion.

Censure Motion.

It was moved by Dr. L. Abramovich, seconded by Dr. R. Skinner:

That the Editor and the management committee of THE MEDICAL JOURNAL OF AUSTRALIA and the Federal Council be censured for the leading article of the issue of May 14, 1938.

Dr. Abramovich said that he doubted if any article published in the journal had done as much harm as this article. It had appeared on the night of the first joint special meeting of delegates with the Council to discuss the national insurance proposals. Mr. Bridgen had attempted to have the article put in as part of his evidence against the profession. Dr. Abramovich agreed that

the journal must print anything supplied by the Federal Council. That was why the Canterbury-Bankstown Medical Association had felt that the Editor and the management committee should be censured for what his association thought was an ill-advised leading article.

Dr. R. Skinner said that the leading article of a paper usually indicated the policy of that paper.

Dr. Davidson said that one important aspect had been overlooked. He did not say that he agreed with the publication of the leading article, but he felt that due consideration should be given to the fact that in that leading article it was said "On available information", and the whole article hung on that. The answer to Commissioner Bridgen and the rest of them was that the information supplied to the Federal Council had been all one-sided. That "on available information" should have been stressed before the commission, because it would be found that that altered considerably the whole bearing. There was a column headed "British Medical Association News", which was intended for statements of fact, whereas a leading article should be a statement of opinion based on facts. That column was available to any Branch, to the Federal Council or to the local associations for the publication of news concerning medical, political or other matters.

Dr. Davidson said that he also wanted to state that the leading article in question had been submitted to the President of the Federal Council. It had not been published for a long time afterwards, partly because of the minister's request for secrecy.

Dr. R. J. Jackson said that the members of the Northern District Medical Association were of opinion that the time had long since passed for any such motion. The explanations that had come out in evidence had proved beyond question that everything that could be done had been done by the Federal Council.

Dr. G. M. Barron and Dr. J. G. Hunter also spoke.

The motion was not carried.

National Health Insurance.

Submission of Regulations to the Profession.

It was resolved, on the motion of Dr. L. Abramovich, seconded by Dr. J. R. Ryan:

That no agreement be reached between the Government and the medical profession until the proposed regulations have been submitted to the profession for examination and agreed to by the profession as a whole.

Dr. R. J. Jackson, Dr. J. G. Hunter, Dr. W. F. Simmons and Dr. K. C. Rawle took part in the discussion.

Amendment of the Act.

It was resolved, on the motion of Dr. L. Abramovich, seconded by Dr. J. R. Ryan:

That no agreement be reached between the Government and the profession unless the Act is amended so that any regulations issued after the scheme is functioning must be agreed to by the representatives of insurance practitioners.

Dr. Abramovich said that the section of the Act dealing with this matter read as follows:

The Government may consult with the Consultative Committee if it thinks fit with regard to the issuing of any regulations.

If insurance medical officers disagreed with anything, the commissioners could still go ahead and issue the regulations notwithstanding; and whereas at the commencement of the scheme the medical officers might be in complete accord with the regulations proposed, it might happen that in the course of time regulations would be issued with which they disagreed and which would be detrimental to the interests of the profession. The Canterbury-Bankstown Association felt that the Act should be amended so that any regulations issued after the scheme had been in operation must be agreed to by representatives of the insurance practitioners.

Dr. J. R. Ryan said that if members were to accept service under the scheme they must have some such protection. He did not think the profession should consider entering into the proposed agreement without such a proviso.

A Pledge not to Accept Service unless Suitable Terms are Offered.

It was resolved, on the motion of Dr. G. F. L. Elliott, seconded by Dr. L. Abramovich:

That a pledge be required from all members of the profession in the event of the Government's terms not being accepted.

There was a long discussion, in which Dr. R. Skinner, Dr. R. J. Jackson, Dr. A. L. Caselberg, Dr. R. F. Back, Dr. G. N. M. Aitkens, Dr. K. C. Rawle and Dr. R. V. Bretherton took part.

It was resolved, on the motion of Dr. R. O. Williams, seconded by Dr. R. A. Robertson:

That the British Medical Association Council be requested to secure, without further delay, a united front in the profession in preparation for future eventualities. This may be achieved by requesting every medical practitioner to sign a pledge to the following effect: "Every medical practitioner to pledge to refuse any appointment for medical service under the Government national health insurance scheme, until such time as it has received the endorsement of the medical profession."

There was a lengthy discussion, in which the following took part: Dr. R. F. Back, Dr. J. G. Hunter, Dr. H. R. R. Grievé, Dr. R. J. Jackson, and Dr. R. Skinner.

Refusal to Accept Service.

It was resolved, on the motion of Dr. J. R. Ryan, seconded by Dr. R. A. Robertson:

That steps be taken to ensure, as far as possible, that no practitioner, either member or non-member of the British Medical Association, accepts service under the *National Health Insurance Act* until such time as terms, conditions and regulations have been approved as satisfactory.

Capitation Fee for Country Practitioners.

It was resolved, on the motion of Dr. K. C. Rawle, seconded by Dr. R. J. Jackson:

That additional evidence be called before the Royal Commission to cover adequately the viewpoint that there be an addition to the capitation fee for country practitioners.

Dr. Rawle said that the members of the Western Medical Association felt that the way the mileage problem was going before the Royal Commission it did not look as if the general practitioner in the country was going to get the 25% he had been led to expect from the various meetings.

Dr. R. J. Jackson said that it had been the policy of the Northern District Medical Association to support consistently that contention, and, like Dr. Rawle, he had been waiting for evidence to be produced before the Royal Commission to indicate that there would be an extra 25% on the capitation fee for country practitioners.

Dr. R. C. Traill said that he had read the evidence and he felt that not enough stress had been laid on the necessity for an increase for the country, particularly as the country doctors had to do their own work and follow their own cases right through to a conclusion.

Dr. R. Skinner also spoke.

Publicity.

It was resolved, on the motion of Dr. K. C. Rawle, seconded by Dr. R. J. Jackson:

That a commercial publicity organization be employed for publicity and propaganda on professional ideals and policy.

Dr. R. J. Jackson said that at present the public were completely disinterested; they were totally unaware of their responsibilities in the matter. But when they were called upon to pay the 1s. 6d., they would become interested and then the profession would be asked why they had not been told about this before.

Dr. H. R. R. Grieve said that he thought the time had arrived when the profession's traditional aloofness from all forms of publicity should be halted and they should embark on a new policy with regard to the dissemination of information to the public. As had been pointed out, the profession was being attacked most unjustly. Even the Association itself was attacked day after day, and that out of sheer ignorance. Not one person in ten thousand in the community had a true idea of its nature. The British Medical Association had become a byword. In the public mind it was synonymous with something that was completely undesirable. If the public but knew—and they could be told in the way that had been suggested—it was one of the best protections they had, not only in respect of their health service, but also in respect of the prevention of their exploitation. Dr. Grieve believed that the British Medical Association must come out into the open, consider the matter of publicity carefully, treat it in a dignified way, and conduct it through approved channels. There was nothing new in it as far as the Association was concerned. Recently he had received copies of the forms of advertisement used by the parent body in Great Britain advertising its national health service. These advertisements were circulated through proper advertising channels, and the whole thing was done in a way at which the most punctilious could not cavil.

Formulation of a Scheme of National Health Insurance.

It was moved by Dr. R. O. Williams, seconded by Dr. R. A. Robertson:

That the medical profession is prepared to cooperate with the Federal Government in a scheme of national health insurance subject to the following essential requirements:

- (i) Any such scheme to conform strictly to the Common Lodge Agreement (New South Wales) in all respects (as a minimum).
- (ii) Any such scheme shall make provision for adequate representation of the medical profession in administration and regulation of the conditions of medical service (i.e., medical benefit).

Dr. Williams said that the object of bringing this motion forward at that time was that the matter could be considered thoroughly and the profession would be ready when the time came to offer an alternative proposal. Schemes of health insurance obtained all over the world; Australia was about the last to adopt one. To prove its good faith the profession must have an alternative scheme, and must show that the medical practitioners were prepared to cooperate with the Government. Dr. Williams said that the lodge system in New South Wales was not perfect, but it had worked so satisfactorily for many years that the Central Southern Medical Association thought it was not propitious now to raise the question of increased remuneration under it.

Dr. A. L. Caselberg said that the South-Eastern Medical Association supported the motion, but would not agree to any scheme that departed from the Model Form of Agreement as amended.

Dr. R. J. Jackson said that he had hoped that Dr. Williams would have taken his cue from Dr. Rawle. The feeling of the members of the Northern District Medical Association was that the service should be comprehensive. The profession must not be stampeded. It might take two years to devise a proper scheme. The Northern District Medical Association would agree to anything that was reasonable; but it recognized the impossibility of deciding anything that was worth while at that meeting

beyond the principle of contract service to the public. It was prepared to support the principle of contract service to the public controlled by the medical profession.

Dr. R. F. Back said that the majority of the members of the Western Suburbs Medical Association thought it inadvisable to have an "all in" scheme, and they thought that the contract service should be increased.

Dr. R. V. Bretherton said that he had been instructed to move against the motion. The members of the Warringah District Medical Association did not think the profession was on trial at all, and they did not think there was any occasion for the consideration of alternative schemes. The scheme had been forced on the profession by the Government. The profession did not want it, and no one else seemed to want it.

Dr. G. N. M. Aitkens, Dr. L. Abramovich, Dr. H. R. R. Grieve and Dr. W. F. Simmons also spoke.

The motion was not carried.

Extension of Contract Practice.

It was resolved, on the motion of Dr. W. F. Simmons, seconded by Dr. K. S. M. Browne:

That consideration be given to the question of the provision of a complete medical service to the public by means of contract practice.

Dr. Simmons said that the Medical Politics Committee suggested that consideration of the matter should be given from the following aspects:

I. Complete service.

A. General practitioner.

B. General practitioner and specialist service.

II. A general practitioner service with exclusions, like the Common Form of Agreement.

1a. Complete general practitioner service.

(a) To include:

(i) Ordinary physician's attendance.

(ii) Surgery—

(a) Minor.

(b) Major (not requiring specialist service).

(iii) Fractures (not requiring specialist service, such as orthopaedic treatment and so on).

(iv) Anaesthetics (not requiring specialist service).

(v) Midwifery (not requiring specialist service).

(vi) Complete annual "overhaul".

(vii) Consultations with practitioner members, that is, members residing in their own localities.

(b) Administration, involving:

(i) Finance: Each member who would be willing to take part in the service would contribute to a common pool to launch the scheme;

(ii) Relations with friendly societies; and that either under the Common Form of Agreement or as our agents.

(c) Subscriptions, involving consideration of the following:

(i) Sliding scale for various grades of incomes: say up to £260, £261 to £365, and £366 to £550.

(ii) Rates of subscription for persons without dependants and those with dependants.

(iii) Persons with dependants to pay by one of the following methods:

(a) Flat family rate irrespective of the number of dependants.

(b) Uniform basis for each unit of the family.

(c) A tapering scale.

1a. General practitioner and specialist service.

It was thought that the time had arrived for some form of public health service to be provided. This would

be a purely voluntary scheme. If the profession had something to give the people, the profession would want to render a public service to Australia, to the people who should be entitled to take advantage of its provisions, and not to the Government.

It was resolved, on the motion of Dr. K. C. Rawle, seconded by Dr. W. L. Kirkwood:

That a special subcommittee be formed to consider the alternative schemes and to draw up the principles for submission to the local associations.

Dr. G. F. L. Elliott and Dr. A. C. Thomas took part in the discussion.

Luncheon.

The Council of the New South Wales Branch of the British Medical Association entertained the delegates at luncheon at the University Club.

ANNUAL MEETING OF WESTERN MEDICAL ASSOCIATION, NEW SOUTH WALES.

The annual meeting of the Western Medical Association, New South Wales, was held at Wellington, New South Wales, on September 25, 1938. Thirty members of the association were present.

Dr. W. W. Cameron was elected president, and Dr. K. C. T. Rawle vice-president.

We have been asked to report that the members present unanimously supported the stand taken by the Central Southern Medical Association, New South Wales, and a pledge to that effect was signed by every member present.

We have also been asked to record that the meeting considered that (i) more evidence in favour of an increased capitation fee in rural areas should be placed before the Royal Commission, and that (ii) to the present the case for the country medical practitioners had not been adequately presented.

NOMINATIONS AND ELECTIONS.

The undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Carrodus, Arthur Leary, M.B., B.S., 1935 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

The undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Sharland, Andrew Alexander, M.B., B.S., 1933 (Univ. Sydney), 98, Barker Road, Homebush.
McMahon, Patrick Joseph, M.B., B.S., 1934 (Univ. Sydney), Auburn Street, Moree.
Channon, James Neville, M.B., B.S., 1938 (Univ. Sydney), Western Suburbs Hospital, Croydon.
Pearson, Herbert Hilary, M.B., B.S., 1938 (Univ. Sydney), Western Suburbs Hospital, Croydon.

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Pædiatric Society was held on June 8, 1938, at the Children's Hospital, Carlton. Dr. COLIN MACDONALD, the President, in the chair. Part of this report appeared in the issue of October 1, 1938.

Von Gierke's Disease.

DR. MARGARET MACKIE, on behalf of Dr. IAN WOOD, showed a boy, aged two years and nine months, who had developed normally until five months of age. From that time the abdomen had steadily increased in size, and dilated veins had appeared on the abdominal wall. He had not walked or talked until two years of age. He was very small for his age, had a large head and prominent abdomen, and his legs seemed very thin. The liver was regularly enlarged down to the level of the umbilicus and was smooth and firm. The spleen was not palpable. The testes were in the inguinal canals.

Dr. Mackie said that acetone had been present in the urine on two out of three occasions. One black stool contained blood; on other occasions the faeces had appeared to be normal. The fat content of a stool was estimated at 21% by weight of the dried faeces. The child was not anemic. The fasting blood sugar content had been estimated twice; the findings were 0.03% and 0.06%. The response to injection of adrenaline had been a very slight rise in the blood sugar level. The serum was milky and had not reacted to the Wassermann test.

Dr. Mackie stated that Dr. Stanley Williams had suggested the possibility that the child was the subject of von Gierke's disease. Glycogen storage disease was first described by von Gierke in 1929. He reported the cases of two patients, dying of intercurrent disease, in whom hepatomegaly had been observed during life. The liver in each case was found to have an enormously increased glycogen content. There was also great deposition of glycogen in the kidneys. Schönheimer had demonstrated lack of diastase ferment in the livers of these patients.

A case reported by Wagner and Parnas in 1921 as a metabolic disturbance in which the liver was unable to store glycogen, and in which the thyroid gland was hyperactive, was reported by Wagner again, in 1932, as a case of von Gierke's disease. Progress in the intervening years was outlined. There was little change in the size of the liver, growth was poor, and at the age of sixteen years the girl developed diabetes mellitus.

Worster-Drought, in 1935, reviewed a typical case, that of a patient first shown in 1923 with no definite diagnosis. He traced the course of the disease over fifteen years and found that recovery was apparently complete, with disappearance of enlargement of the liver, improvement of bodily development to normal, and freedom from all symptoms.

Van Creveld, in 1932 and 1934, reported two cases. He had done considerable research in the biochemistry of the condition, and discussed the aetiology. He believed that lack of glycolytic ferment in the liver was only a factor in the disease, and that it was probably due to dysfunction of the anterior lobe of the pituitary gland, or of the adrenal gland. Reports of cases of von Gierke's disease had become more frequent in the last four years, and about forty cases had been reported.

Dr. IAN WOOD said that he agreed that the patient had von Gierke's disease, and he congratulated Dr. Mackie on the way she had conducted the investigation and on its presentation to the meeting.

Dr. KATE CAMPBELL suggested the possibility of the presence of an adrenal tumour.

Mikulicz's Syndrome.

Dr. J. W. GRIEVE showed a boy, aged five years, who in June, 1937, had had whooping-cough and had not been absolutely well since the attack. Towards the end of March, 1938, swellings had been observed under the chin and in the left axilla. A few days later both parotid glands became swollen, after which pain occurred in the back. The medical attendant consulted at that time had found generalized glandular enlargement with hepatomegaly and splenomegaly and great enlargement of the tonsils. The family history was satisfactory and the past history was good, except that at eighteen months of age the patient had had pink disease and had been ill for several months.

Dr. Grieve said that on April 26, 1938, when he had examined the child for the first time, the weight was 21.5 kilograms (three stone five and a half pounds). The patient looked pale, and gross enlargement of both parotid glands and of both submaxillary glands was present, as well as some enlargement of both lachrymal glands. Small, discrete glands were palpable in all superficial groups. A large discrete gland was present in the left axilla. The femoral glands were elongated. The submaxillary glands were rather tender. The spleen was enlarged to two fingers' breadths below the costal margin, and the liver was enlarged to three fingers' breadths below the costal margin. The tonsils were large and fleshy. No skin nodules or hæmorrhages were observed. Two weeks later the child's condition was worse. The weight had increased to 25.2 kilograms (three stone eight pounds), but the child was having difficulty in swallowing solids, had severe epigastric pain and a temperature of 37.7° C. (99.8° F.).

A gland excised from the left axilla by Dr. Whitaker was examined by Dr. Webster, who sent the following report:

Pronounced hyperplasia affecting the lymphoid parenchyma. There is no response on the part of the reticulum as would be expected in any infective or granulomatous process such as Hodgkin's disease. The hyperplasia is not of a malignant character; it is compatible with a leuchæmia, but if so it would be of the small-celled, chronic type.

Dr. Crisp had reported the presence of a mediastinal glandular mass after radiographic investigation.

The erythrocyte count had fallen progressively from 4,900,000 per cubic millimetre on April 20 to 3,850,000 on May 12, 2,880,000 on May 26, and to 2,090,000 on June 7. The colour index had remained close to normal and the leucocyte count had not exceeded 4,000 cells per cubic millimetre. The differential leucocyte count had not been consistent or distinctive, though many immature cells had been seen.

Deep X ray therapy had been commenced and had been associated with rapid subsidence in the size of the superficial glands and tonsils. The child had not had any constitutional upset and had become able to take solid food without discomfort. The pallor had increased and the blood picture had deteriorated. Dr. Grieve said that he was showing the patient as an example of an atypical chronic type of leucæmia associated with Mikulicz's syndrome. He would welcome suggestions concerning diagnosis and treatment.

Dr. T. H. STEEL said that the syndrome known as Mikulicz's disease was described originally by Mikulicz before the Society for Scientific Therapy on January 23, 1888. His work was not published until 1892, and meanwhile similar descriptions had been given by Halkenhoff in 1889 and by Fuchs in 1891. Johann von Mikulicz-Radicki was a pupil of Billroth, who, employing Listerian principles, was the pioneer of visceral surgery. Mikulicz himself was responsible for some of the earliest operations on the stomach and œsophagus, and it was he who had first described the method of gastroscopy.

The syndrome known by his name was described by Mikulicz as a condition of symmetrical enlargement of the lachrymal and salivary glands, and he had pointed out that often the lachrymal glands were involved alone. The condition was benign and did not recur after extirpation of the glands. Dr. Steel said that some writers considered that the points emphasized by Mikulicz served to distinguish the condition as a separate entity. Since the time of Mikulicz enlargement of each of the groups of salivary glands had been described in turn, and it seemed more correct to regard the condition as a syndrome which might be caused by a number of pathological conditions, such as a leucæmia, Hodgkin's disease and lymphosarcoma.

Dr. ERIC COOPER said that he did not expect deep X ray therapy to have any effect on the progress of the con-

dition. It might keep the leucocyte count down, but it would not stay the disease. It was essential to the diagnosis of Mikulicz's syndrome that enlargement of the lachrymal gland must be present. This was not common in Hodgkin's disease as was parotid enlargement. It had to be recognized that Mikulicz's syndrome might occur as part of quite a number of pathological conditions. He agreed with Dr. Grieve that in the case under discussion the diagnosis was probably an atypical form of leucæmia.

Dr. E. R. CRISP said that when the child had first been referred to him the diagnosis of Hodgkin's disease had had to be considered very seriously.

Dr. Grieve added that the reason for deep X ray therapy was the difficulty the child had had in swallowing. It had without doubt improved that symptom. He did not expect more deep X ray therapy to cure the patient, though he might have to employ it or blood transfusion therapy to relieve the patient from time to time.

Hodgkin's Disease Treated by Deep X Ray Therapy.

Dr. E. R. CRISP reviewed a series of case records and films of patients suffering from Hodgkin's disease treated by deep X ray therapy. In 1936 a boy, aged thirteen years, had had an enlarged gland in the left axilla, which had been treated elsewhere as a chronic inflammatory condition. Dr. Mollison had reported on examining the gland microscopically that moderately active Hodgkin's disease was present. The boy had also had enlargement of the mediastinal glands. He underwent a course of deep X ray therapy, and at the time of the meeting was apparently in good health, attending school and leading a normal life; and the radiographic appearances of the mediastinum were within the limits of normality.

In 1927 Dr. C. J. O. Brown had shown a patient, eleven years of age, from whom he had excised a group of glands three years earlier. Examination of the glands had established the diagnosis of Hodgkin's disease. The boy had had deep X ray therapy, and was in regular employment as a barber. He was twenty-two years of age and in good health.

In 1927, at the Children's Hospital, a girl, aged eleven years, had been found radiographically to have gross mediastinal enlargement. Under the influence of deep X ray therapy the mediastinal glands had returned to the normal size; and at the end of 1937 the girl had been seen at the Alfred Hospital and appeared to be in good health.

Dr. Crisp added that if the glandular masses spread concurrently with or after the use of deep X ray therapy, the end was in sight for the patient. It had to be remembered that approximately one in five patients with Hodgkin's disease was frankly tuberculous. He remembered a patient in a plaster cast who had been subjected to deep X ray therapy. It had been necessary to remove the plaster cast from the patient because of rapid breathing, and the patient died shortly afterwards from acute bilateral tuberculous bronchopneumonia.

Dr. Cooper said that the case records to which Dr. Crisp had referred were most impressive. It was the particular type of Hodgkin's disease accompanied by large mediastinal masses that responded to deep X ray therapy as did that in which large superficial glands were a feature. Dr. Cooper had recently reviewed sixty-seven case records of Hodgkin's disease, and he had been struck with the results of deep X ray therapy in prolonging life above the usual expectation of five years. Superficial glands melted away; and though they were apt to become enlarged again, another course of treatment again temporarily settled them. Some of the patients were alive as long as twelve years after the initiation of treatment. Anæmia had progressed in some cases; and it was interesting to forecast which patients were going to respond to treatment. Those with a high leucocyte count, lymphocytes or eosinophile cells, gave better results than those with a low percentage of hæmoglobin and a low leucocyte count. These did not respond so well and

died in one to five years. Some of those with hypochromic anemia did, however, respond to deep X ray therapy combined with other treatment.

Dr. Cooper said that a majority of the mediastinal cases also responded quickly to deep X ray therapy; the patients might be relieved for two to five years, and occasionally lived longer than five years. The glands responded at first, but later failed to respond in a large proportion of cases. Radiologically the infiltration might be suggestive of bronchial carcinoma. Hodgkin's disease did not confine its activities to the lymph glands; and many of the innumerable new nodes formed were not lymph nodes, though they looked like diseased lymph nodes. Lymphoid tissue was quite commonly found in the stomach wall and in the loose tissues as well as in the bone. Hodgkin's tissue in bones was associated with aplastic anemia.

With reference to the group of patients with abdominal Hodgkin's disease, causing enlargement of the spleen and liver and often jaundice and pruritus of the skin, Dr. Cooper said that fewer of those patients responded to deep X ray therapy. They were the patients who had extraordinary variations in temperature. In Wilks's original description of the disease he had included pyrexia as an important feature. Dr. Cooper explained that Thomas Hodgkin was Wilks's teacher. Hodgkin had described seven case records, only two of which could be included under Wilks's nomenclature, in which he gave the disease the name of his teacher. Murchison in 1870 had described the periodic pyrexia years before either Pel or Ebstein. In conclusion, Dr. Cooper summarized the points that indicated that a subject of Hodgkin's disease was failing to respond to deep X ray therapy. Those points were persistent or progressive anemia, dyspnea out of proportion to the mass in the mediastinum, and intense pruritus.

Dr. ALAN MACKAY concurred in the views that Dr. Cooper had advanced concerning the effects of deep X ray therapy. He described the type of patient likely to respond extremely well to the treatment as one with an early lesion, having only one group of glands enlarged and a normal blood picture. In later cases, in which the distribution of the glandular enlargements was spreading and anemia was present, the prognosis was not so good. From the radiotherapeutic aspect the subjects of Hodgkin's disease should be regarded as urgent cases and should be treated heavily over the main area affected; this should be followed by treatment of the outlying glands. After an interval of a little less than two months a second course of treatment should be given, and again in two months the treatment should be repeated. Unfortunately, many of the patients were seen too late by the therapist; and the aim of treatment could then be only palliative, to make the patient more comfortable. Dr. Mackay referred to the occurrence of bone involvement reported from the New York Memorial Hospital. In a large series of almost four hundred patients, approximately 20% had bone involvement; and in almost every case that fact had been demonstrated radiographically during life. Dr. Mackay showed some films to illustrate that the presence of bone involvement could be found at times as long as two years before there was any obvious enlargement of glands or any accessible gland could be removed for histological examination.

Dr. H. DOUGLAS STEPHENS said that he could confirm the favourable nature of the prognosis if the disease affected a single superficial group of glands which could be removed surgically, or if the only site affected could be treated adequately by means of deep X ray therapy. He referred to an example in which he had removed a group of cervical glands from a boy, aged seven years. Twenty-four years had elapsed, and the patient was still living and had been healthy and active since the operation. Dr. Reginald Webster had examined the glands removed and had reported the presence of Hodgkin's disease. Several years later Dr. Webster had again prepared sections from the specimen, which had been retained in the hospital

museum, and had been able to confirm the diagnosis. Dr. Stephens expressed the hope that the patients whose progress had been reported by Dr. Crisp would remain under observation, and that at a future date a further report would be brought to the notice of the members of the society.

Dr. Stephens said that in those cases in which the disease showed an active tendency at the commencement bone involvement occurred. He also referred to the group of cases in which the disease appeared, both clinically and radiologically, to be limited to the mediastinum. He had had an example in which the condition had been under observation for eleven years and no extension had been manifested. The prognosis was very doubtful in some of the mediastinal cases because of the difficulty in proving the diagnosis. He wondered whether radiologists could differentiate between mediastinal lymphosarcoma and Hodgkin's disease.

Dr. COLIN MACDONALD said that he had been very interested to hear of the results of radiotherapy in Hodgkin's disease. He referred to the tendency of a number of conditions, which could be grouped as reticulo-endothelioses, to affect bone. At the Peter Bent Brigham Hospital, where Christian, of Schiller-Christian syndrome fame, was the Nestor, Dr. Macdonald had been informed that there were no proven cases of deposits in bone under the age of fourteen years. Dr. Macdonald said that he was also interested in the criteria of diagnosis, because many patients with a doubtful diagnosis were sent for treatment. He was under the impression that the presence of Dorothy Reed giant cells was characteristic of Hodgkin's disease. In America, von Sternberg regarded the disease as an atypical form of tuberculous disease. That view revived the necessity for consideration of the inter-relationship of the two conditions, and, in fact, interest in the wider claims of Dr. Thomas Cherry, which were founded on the sincere and honest work of a lifetime. Boyd, the pathologist, had joined with the great Ewing in the view that Hodgkin's disease should be classified as an example of the infective granulomata. With reference to treatment, Dr. Macdonald added that in America, for children, blood transfusions were used liberally at the Mayo Clinic and at New York, combined with a small dosage of deep X ray therapy over a long period of time.

Dr. ERIC COOPER spoke again to say that no conclusion could yet be reached concerning the etiology of Hodgkin's disease. Approximately one patient in five at autopsy examination was found to have had active tuberculosis. This fact bore out Ewing's observation that tuberculous disease followed Hodgkin's disease like a shadow. The pathological picture in Hodgkin's disease was absolutely different from that in tuberculous disease. Dr. Cooper remarked that Virchow and Sternberg had described the appearances of the giant cell many years earlier than Dorothy Reed. The presence of those characteristic cells combined with eosinophilic and lymphocytic hyperplasia were the main features of sections made in early Hodgkin's disease. In sections made from the glands of patients dying of the disease, fibrosis, hyaline changes and distortion of the architecture of the gland were sometimes found.

Dr. Cooper said that in selecting sixty-seven case records he had rejected thirty others because the data were unsatisfactory. Approximately two-thirds of the sections examined were typical, but the diagnosis, though possible, was not certain so far as examination of the remaining sections went.

Dr. Cooper said that they all suspected that Hodgkin's disease was related to tuberculosis, perhaps in aberrant form, especially as it was recognized that the *Bacillus tuberculosis* was sometimes non-acid-fast and could assume coccal form or an ultramicroscopic phase. If Hodgkin's disease was an infective granuloma, it took on invasive characters unlike any other infective granuloma.

Proceedings of the Royal Commission Appointed to Inquire into Matters Pertaining to National Health Insurance.

Tuesday, October 11, 1938.

The sittings of the Commission at Adelaide commenced at 10.30 a.m. Mr. Dovey referred to the difficulty of having witnesses ready and prepared upon the arrival of the Commission in each city, and then proceeded to discuss the position of the friendly societies in South Australia.

Mr. Dovey: The position in regard to friendly societies in this State, having regard to their medical contract practices, is different from that which obtains in any of the other States. In this State the arrangement is made with the medical practitioner in respect of either one, two or three family units, one unit being the member himself, the second unit being his wife, and the third unit being his family, whether the family consists of one or more than one child.

There is also some difference in the method of providing for drugs, which, although it does not fall within the scope of this inquiry, may throw some light on some of the matters that have been calling for investigation, in this way. It appears that in the past years a different method of obtaining drugs was in operation from that which obtains today. Until 1927 the doctors themselves dispensed the drugs or made arrangements with the chemists for the dispensing of drugs, privately between themselves. After 1927 arrangements were made with the lodges direct and with the chemists, but some little time after the altered system came into being it was found there were a great many more prescriptions being written and dispensed by the chemists than in the past. Latterly, by arrangement with the chemists, it was decided to charge for the provision of drugs in respect of each unit, either at 1s. a quarter or 1s. a scrip. Some lodges still carry on under the quarterly system, others on the scrip system. In addition to the payment of 1s. a quarter or 1s. a scrip, it was provided that the member of the lodge, on presenting a scrip to the chemist for dispensing, should pay over the counter an extra 3d., and when that was put into operation it was found that the number of prescriptions the chemists were called upon to dispense fell away very considerably.

It seems to me that that evidence might be of some importance, having regard to the contentions that have been put forward from time to time by my friend and the witnesses he has called, to the effect that if a contract or insured patient can get medicine and drugs for nothing, without any restrictions being placed upon him, he might in some cases abuse that privilege. It seems to me desirable to put that evidence before the Commission in order that it may throw some light on the matter.

Mr. Abrahams: It might throw some light on the mileage.

Certain other preliminary matters were discussed and then Mr. Abrahams raised a question for consideration under Section 106 of the *Commonwealth Navigation Act*. Mr. Abrahams said that by that Act, broadly speaking, the owner of an Australian ship was bound to provide medical attention to a sailor away from his home port. If he was landed at some intermediate port temporarily on account of injury or illness, the owner was still bound to make provision for his medical attention. Difficulties therefore might arise about duplication of services. Mr. Abrahams stated that he understood that the National Health Insurance Commission did not intend to put such men upon a panel, and therefore he assumed that medical practitioners who received income from such sources under the *Commonwealth Navigation Act* would not be deprived of that income. It was arranged that a ruling upon this and matters that had been raised earlier should be obtained with as little delay as possible from the National Health Insurance Commission.

The position was discussed between counsel and the Commission.

The Chairman: He [the seaman] would be on a panel in the ordinary course, but in respect of injuries or ill health coming within the *Navigation Act* the panel provisions would not apply to him.

Mr. Dovey: That is so. He might, if he chose, put his name on the list of an insurance practitioner.

The Chairman: In the ordinary course he would be on a panel, because the *Navigation Act* only refers to illnesses which occur while he is on a ship. If he falls ill between voyages and on shore at his home port, the *Navigation Act* does not apply to him at all, so that, as to shore illnesses, he is on a panel in the ordinary way.

Mr. Dovey: If he so desires. I mean there will be no placing of names on the panel or list of any insurance practitioner. That was made plain by Mr. Commissioner Green when he was informing this Commission as to the manner in which the Commission proposed to split up the capitation rate amongst insurance practitioners.

Mr. Abrahams: His Honour has said that is an open question. It has never been determined yet.

Mr. Dovey: I do not know about being an open question. I know my friend hinted that it may be that it was mandatory on the Insurance Commission to see to it that every insured person was on a panel. We take the contrary view.

The Chairman: It may be that that is correct—to see that he is on a panel—but that does not mean that they are to compel that particular insured person to take the medical service. That is all I was pointing out; but I should say that probably, in the distinct reading of the Act, if a man says, "Although I am paying my 1s. 6d. I do not want to go upon a panel", I suppose he would be left off.

Mr. Dovey: We say that in the strict reading of the Act a man does not go on the panel unless he desires to do so, and we say that the position here is just as it is in England.

The first witness called by Mr. Abrahams was Dr. Raymond Thomas Binns, of Fullarton, a suburb about three and a half miles south of Adelaide.

Dr. Binns described his experiences in various panel practices in England and was then asked by Mr. Abrahams: Now I want you to answer this question in your own way. You had four years' panel experience in England. I want you to express your view of the effect of the system on the panel doctor?

A.: Speaking in particular from the three years I spent at Bristol, there were so many visits and consultations to be done during the day that sufficient time was not available for the proper examination and treatment of each patient. The result was that the examinations in many cases were cursory and the time spent had to be reduced to the minimum. For that and other reasons, it followed that patients with serious medical or surgical complaints, such as anæmia, diabetes, pernicious anæmia, and serious illnesses like that, and serious surgical conditions which needed any skilled surgical treatment, would immediately be sent to the local general hospital or the Bristol General Hospital or the Bristol Infirmary. Consequently the panel practitioner, myself and partners in particular, would not have experience in the treating of these more serious illnesses, and as a result of that, in the course of years, his skill in treating the more serious illnesses would deteriorate.

Q.: You think that a panel doctor's skill in the course of years deteriorates, because he has not the practice?

A.: Skill in treating the more serious types of illness.

Q.: I think you used the expression to me that he is a starting point for the great public hospitals?

A.: The work he does is the treatment of the more minor illnesses, and all the serious illnesses he sends to the general hospitals.

Dr. Binns then gave instances in support of his statements and was asked by the Chairman: If they were private patients, would they be sent to the public hospital?

A.: Sometimes yes and sometimes no.

Q.: If not, would the doctor treat them in their own homes?

A.: If not, they would be treated either in their own homes or in a local private hospital.

Q.: By him?

A.: Yes.

Q.: So to that extent apparently he retains his skill and ability. That is to say, although he did not exercise that skill and ability upon panel patients, he was apparently able to exercise it upon private patients?

A.: Yes.

Q.: Which, of course, means that he had not lost his skill and ability, but that it was impracticable for him to exercise it upon panel patients?

A.: Yes.

Q.: Is that the substance of what you wish to say?

A.: Yes.

Mr. Abrahams: What about surgical skill?

A.: All patients requiring surgical treatment would be sent to the general hospital and would not be treated by the general practitioner.

Q.: Even private patients?

A.: Yes. Speaking of the three practices in which I was interested, there was no major surgery at all done by any of the practitioners.

Q.: For anybody?

A.: For anybody, either private or panel.

Q.: But as far as medical matters were concerned, they did attend to some of their private patients in their own homes, but serious medical matters, such as you have mentioned, and as regards panel patients, were sent to the hospital?

A.: Yes.

Q.: Then what did the panel patients get?

A.: Treatment for the majority of illnesses, such as coughs, colds, lumbago, sciatica, rheumatism, muscular rheumatism, minor injuries, cuts, sprains, sore throats . . .

Q.: Wax in the ears?

A.: Yes.

Q.: Abrasions?

A.: Yes. There were a very large proportion of minor functional nervous diseases, such as indigestion, headaches, backaches, kidneys, nervousness, sleeplessness, and so on.

Q.: How did you find the cost of living in England compared with Australia?

A.: The cost of living I found to be very much less than the cost of living in Adelaide.

Q.: And a motor car, for instance?

A.: At Bristol I had an "Austin 7", which cost me about £112, and petrol, if I remember rightly, cost me about 1s. 2d. or 1s. 3d. per gallon. The mileages were very short and the roads were good.

Q.: Do your lodge patients here receive the same treatment as your private patients?

A.: Yes.

Q.: And how does the treatment of those compare with the treatment under the panel in England?

A.: The patients here get infinitely better treatment than the panel patients did in England.

Q.: You get time here for a thorough examination?

A.: Yes.

Dr. Binns gave further details of English conditions and made comparisons between English and Australian conditions. He was then cross-examined by Mr. Dovey, first as to the size of practices.

Mr. Dovey: So that, in your opinion, a man could not serve more than 2,000 people who might require his services during the year?

A.: Round about that.

Q.: In other words, it is one doctor to 2,000 members of the community. That is your idea of the requirements of the community in order to confer a satisfactory service to the people and enable the doctor to do his job properly without overwork?

A.: Yes. There are other considerations, of course—the type of person the 2,000 represent, such as women and children. A poorer class district would be different, and so on.

Cross-examination continued as to Dr. Binns's experiences in England and then confidential evidence as to income and numbers of patients was given. After further questioning the witness withdrew.

Dr. Henry Raymond Russell Hancock was examined by Mr. Gain. He stated that he practised at Hamley Bridge, forty-five miles north of Adelaide. Dr. Hancock gave evidence as to the difficulties of travelling, heavy wear and tear on motor cars, and as to mileage.

Mr. Gain: You have a branch surgery at Owen?

A.: Yes.

Q.: I think you are one of the practitioners who will be concerned as to mileage if you maintain that branch surgery?

A.: Very concerned.

Q.: What is your present practice with regard to that branch surgery?

A.: I go to Owen twice a week, on Tuesday and Friday morning. I consult over there from eleven onwards, after I have done my home consulting. It is twelve miles away and sometimes I am over there for an hour. I also do my own dispensing over there, because there is no chemist in that town, and sometimes I do not get back until half past four. On that day I might see a number of patients going to Owen.

Mr. Dovey: How many?

A.: That is difficult to say. The last time I went over there I saw four, and I have seen fourteen in a day, plus dispensing and travelling. But the part about the surgery in that place is that it is twelve miles away, and if I am allowed three miles before I charge mileage from my home and my surgery, it will mean I will have a circle around my surgery at Owen, where I consult twice a week, and a circle around my home, where I consult every day and at any time, and I will have to attend these patients without mileage. At Owen I might have a patient three miles the other side of Owen, who is only three miles from my surgery, but fifteen miles from my home.

The Chairman: That is the case Mr. Abrahams spoke about this morning.¹

Mr. Gain: Yes?

A.: The question is whether I should have to attend these places near Owen in between my Owen days, or do they only pay mileage on my Owen days? If that was so I would have to close down my consulting room at Owen, and I cannot do it. My private patients would be deprived of my services on Tuesdays and Fridays.

Dr. Hancock then gave confidential evidence as to income and the extent of his practice, and was cross-examined thereon by Mr. Dovey. He was also questioned by Mr. Dovey about his practice at Hamley Bridge and Owen. Concerning Dr. Hancock's estimate of the number of his patients who would come under national insurance Mr. Dovey asked: . . . I suppose that most of those are hired hands on the farms?

A.: Yes, and farmers' sons who work on the farms.

Q.: You do not know, of course, whether they receive wages or not?

A.: I know quite a number of them who will receive wages when national insurance comes in.

Q.: You mean that the father will then proceed to pay them a wage?

A.: Certainly.

Q.: In order that he will be obliged to pay 3s. a year to get the benefit of national insurance?

A.: Yes.

¹The question of mileage and branch surgeries raised by Dr. Hancock is one of the questions which have been referred to the National Health Insurance Commission for a ruling.

Q.: You say you know that from what they have told you?

A.: Not from what they have told me, but from what I know of some of the patients. Although they might be wealthy patients, they will try to get as much out of me as they possibly can.

The Chairman: Of the average number of hired hands employed in that district, have you any idea how many would come to you for treatment in the course of the year? First of all, I rather think you would have to make some sort of guess as to the number of hired hands?

A.: Exactly.

Q.: Can you do that?

A.: No, I cannot.

Mr. Dovey: He said 118 out of 581.

The Chairman: Those were the people who came to him.

After Dr. Hancock had given evidence as to the number of lodge patients he saw each year, the Chairman asked: That means that you get the benefit of one-third of the capitation fees without having to give medical attention in return?

A.: Yes.

Mr. Dovey: At any rate, you say that you cannot help us by saying how much you would get from them?

A.: No. I have only got the lodge figures. The other is a guess. It might be about the same, approximately.

Q.: I see that your lodge visits per person averaged some 2.6 attendances per annum?

A.: Yes.

Mr. Abrahams: Or four for those seen.

Mr. Dovey: Yes.

Mr. Abrahams: Then you cannot have it the other way. You cannot say that he got something for nothing.

After further questioning concerning his practice, Dr. Hancock withdrew.

Dr. Harold Richard Hugh Noel Oaten was examined by Mr. Abrahams. He stated that he practised at Penola, which is 270 miles by rail to the south-east of Adelaide and about 32 miles from Mount Gambier.

He was first examined on confidential matters and the figures in his reply to the questionnaire.

Mr. Abrahams: You have a figure here showing a diminution of private services by 29%. I think you counted heads for the whole time you have been in that district?

A.: Yes, I actually counted each patient having a separate clinical card, whether they were lodge or private. I counted every private patient's card, and then worked out which of these patients would become insured, and that gave the figure of one out of every three of my private patients, counting man, woman and child, who would become insured.

Q.: Do you know the conditions of national health insurance—age, conditions and so on?

A.: Yes.

Q.: What did you do about the sons or daughters of farmers employed on the farm?

A.: I disregarded all of those. There are not very many in my district covered by that.

Q.: You did not assume that they would come under the national insurance?

A.: No.

Q.: Yours is a farming area, is it not?

A.: It consists of grazing, dairying and forestry work mainly.

Q.: Then you came to a figure of 33%?

A.: Yes.

Q.: You found you gave [quoting a number] services for lodge extras during the year?

A.: Yes.

Q.: And the proportion which those . . . bear to the total is 13%?

A.: Yes.

Q.: That is the total lodge services?

A.: Yes.

Q.: You reduced the 33% by 13%, which gave you 29%, and that is the way that figure is arrived at?

A.: Yes.

Q.: What are your capitation fees for juveniles?

A.: Eight shillings and eightpence per member per annum.

Q.: Single members, male and female?

A.: Sixteen shillings.

Q.: Man and wife?

A.: Thirty-two shillings.

Q.: Man, wife and family?

A.: Fifty-eight shillings.

Q.: Are these the regular fees in the country districts? Are they on the printed form of agreement?

A.: No, these are higher than the printed forms, but they are about the average for the district, according to my discussions with other men practising in the south-east.

Mr. Dovey: I understand there are different rates in various parts of the State, which have been arrived at by discussion between the branches of the lodges and the individual practitioners in these State districts.

Mr. Abrahams: Do you enforce the mileage clause?

A.: Definitely.

Q.: What is your view about whether less calls are made on that account?

A.: In the nineteen months I have been in the practice lodge patients have called me outside the three-mile limit on three occasions only, and I think it acts as a very definite deterrent.

Q.: What do you think will be the position under the proposal of the Health Insurance Commission? Do you know what the proposal is?

A.: Yes; that is one thing I am not very happy about, because I maintain a branch surgery eighteen miles from Penola, which I visit on two days a week, two hours one day and an hour and a half another day. If, as I have seen in print, the Commission intend paying on the nearest surgery maintained, that will mean all my services at the Kalangadoo branch surgery to my national health insurance patients there would not have any mileage enforced upon them. As I spend three and a half hours there in a week of seven days, that leaves quite a lot of hours when I go up there and for which I would be liable to be called there if there were no deterrent placed upon a patient for calling me. . . .

Q.: What you fear is that the mileage might be reckoned from Kalangadoo, in which case you would get nothing for a call there?

A.: Yes.

Q.: And you would have to start from there and go to places beyond?

A.: Yes.

Q.: That is one aspect of the matter, but what is your view generally about the fee of 2s. per mile one way?

A.: I think, in the first place, it is inadequate, and in the second place, unless that is placed on the patient, it is not going to act as any deterrent on him to call me. . . .

Q.: You are in a one-man town, are you not?

A.: Yes.

Q.: If there is any regulation by the Commission against leaving the practice unattended you will be in some trouble, will you not?

A.: It will mean I will never be able to get away from the town unless I put in a *locum* for holiday purposes. At the present time I might go away in the morning and come back in the evening; but I should imagine that will be cut out, because the services would not be there.

Q.: You do not want that?

A.: No, definitely not.

Mr. Dovey: It would be a matter of policy for the Commissioners; but it seems to me in these one-man towns, most probably the dictates of common sense will necessitate a variation in the contract with the medical practitioner there.

Mr. Abrahams: We only want to direct attention to it to show that the regulations will agree with common sense and it will not be overlooked.

The Chairman: Has the British Medical Association any suggestion to make as to the way in which this very reasonable relief could be made available to medical

practitioners? The position is not very easy to arrange; it is not like an ordinary relieving staff or salaried department where men go away at their prescribed time and the relieving officer can step in.

Mr. Abrahams: Your Honour may remember the lady doctor, Dr. Hermann, who gave evidence in New South Wales, from Kudal, a small place with a small practice. It would be a terrible thing if either they could not leave, or have to get written permission to leave in order to be away for one night.

Mr. Abrahams: Now the matter has been ventilated, I propose, and my friend agrees, when we get back to Melbourne, to arrange for Mr. Brigden to give some information to the Commission.

Dr. Oaten then described travelling conditions in his district. He was then cross-examined by Mr. Dovey as to the figures that he had given concerning his practice.

Mr. Dovey: Did you calculate at all, when you were arriving at this falling off in private practice, the diminution of your income—how much you got from those persons who are now private patients, who would afterwards become insurance patients, for excluded services. Did you make any calculation or estimate or guess? You did not, did you?

A.: I do not think so.

Dr. Oaten withdrew after further cross-examination on figures.

Mr. Abrahams then raised a question concerning workers' compensation and excluded services. This was discussed at some length between counsel and the Commission.

Mr. Abrahams: May I call the attention of the Commission to this scope of service. I have part of the Commission's copy, and if one looks under "2, The Exclusions", one sees the cases falling within the provisions of the *Commonwealth Seamen's Compensation Act* and any Act of a State under which compensation is payable in respect of injuries received or diseases suffered; the workers' compensation acts of the several States, and for insured risks, such as motor accident cases, in which the cost of insurance is covered by third-party motor insurance. It does not matter what the wording is, because whatever is agreed on between the British Medical Association and the Commission can easily be worded properly, but since the doctor gave this evidence about workers' compensation, I have been wondering how far it is possible to exclude a type of case in which the individual who has met with an injury and who has received, say, one and a half guineas a week, or whatever the amount of compensation is, falls under the *Workers' Compensation Act*. It may be that what the Commission thinks or would agree to in this State and in Queensland would be this, though I do not know whether they would or not as a matter of policy: Here is a man who is entitled to 35s. a week compensation for two weeks. He has to pay for his medical attention, and he cannot get it under the panel system.

Mr. Dovey: It is an injury under the Act.

Mr. Abrahams: It is going to be a very serious difficulty in the doctors' way, if they have to ascertain whether it comes under the Act, when the man has not got any money. I know that the British Medical Association and the Insurance Commission intended to make these excluded services workable so far as possible, but it has struck me that that creates rather a difficulty in those States where the man is not paid anything, and I have been wondering whether the Commission really intends the doctor to have the right to charge in cases of that sort, where the man gets nothing, or whether that was really put in, when one looks at the motor car covered by third-party insurance, to let the doctor charge where some third party was liable. That is what I thought originally.

Mr. Dovey: That last part obviously is.

Mr. Abrahams: Yes, and I think the whole thing was designed with that end, and I think my friend agrees. However, Your Honour, there again, if my friend would be so kind as to get the views either by Mr. Brigden in person or by his letter, of the Insurance Commission, it would help to clear up these things before we come to argument on them.

Dr. Harold Powell was examined by Mr. Abrahams. He stated that he practised at Largs Bay, which is eleven miles from Adelaide. He described Largs Bay as a residential area, but said that he also took in Port Adelaide, which is an industrial area. He was questioned as to confidential matters concerning his practice.

Mr. Abrahams: You have a good many clerks in your practice, male and female?

A.: Yes.

Q.: Have you spoken to some friendly society members since national insurance was mooted?

A.: Yes.

Q.: Have they discussed with you their future in their lodge when national insurance comes in?

A.: Yes, some of them.

Q.: Those are the married men, I understand?

A.: Yes.

Q.: What views have been expressed?

A.: They consider that some of the wives and families will remain as members of the friendly societies.

Q.: I understand you have spoken to about ten husbands, members of friendly societies?

A.: Yes.

Q.: Have you found a divergence of opinion in the ten?

A.: Yes, about equal, half and half.

Q.: Equal in what way? What is one view and what is the other view?

A.: One view is that they will remain on the lodge for two units instead of three.

Q.: That is a wife and child?

A.: Yes, wife and children. Another opinion is that they will go off, in some cases, and become nothing but bad payers.

Q.: What reason is given for that half?

A.: I presume that is because they are a poor class now and can just afford to pay the lodge fee.

Q.: Has that been mentioned to you?

A.: Yes.

Q.: Have they told you that?

A.: Yes.

Q.: Five out of the ten think they will go off the lodge because they cannot afford it, and the other five think they will keep the lodge on for their wives and children?

A.: Yes.

Dr. Powell was then cross-examined by Mr. Dovey. Concerning lodge practice, Mr. Dovey asked: Would it be right to say that in the case of a good number of those men who simply have medical benefits for themselves, if you were asked to treat their wives and children, you frequently receive nothing for the treatment?

A.: Yes.

Q.: That position was suggested to me by the representatives of the friendly society and is a position in which doctors find themselves particularly in closely settled localities, such as you are in?

A.: Yes.

Q.: Your experience in that regard is not unique, but is common with that of your colleagues?

A.: Yes.

Q.: Having in mind the number of your patients—you have a great number of men and a goodly number of women—I suppose you find that the women require more attention, or, at any rate, seek more attention than the men?

A.: Yes.

Q.: And so with children, *per capita*?

A.: Yes. Actually that is so, but I do not see many children.

After further questioning Dr. Powell withdrew.

The Commission adjourned at 4.20 p.m. until Wednesday, October 12, 1938, at 10.30 a.m.

Wednesday, October 12, 1938.

Mr. Walter George Brunell, the President of the Friendly Societies' Association of South Australia, was called as a witness by Mr. Dovey and gave evidence on behalf of his association. He gave an account of the history and nature of lodge medical services in South Australia. He stated

that a medical practitioner doing lodge work was customarily referred to as a lodge surgeon.

Mr. Dovey: You desire to draw attention to the fact that the medical service provided in South Australia differs from that in other States of the Commonwealth in that it embraces, at the option of the member, either the member alone or the member and his dependants in this State?

A.: Yes.

Q.: In South Australia a member is viewed as a single unit and the surgeon's fee is based accordingly?

A.: Yes.

Q.: If after marriage a member desires his wife to participate in the medical contract service, the wife, if she be accepted by the lodge surgeon, is placed on the lodge medical list and is counted an additional unit, in respect of whom an additional fee is payable?

A.: Yes.

Q.: Similarly, the family, that is to say, one or more children, may, with the approval of the lodge doctor, also become a further additional unit, and an additional unit fee is charged for that family irrespective of the number of children?

A.: That is correct.

Mr. Brunell continued with the history of the lodge medical services, describing negotiations with the British Medical Association as to a model form of agreement, as to fees and as to the separation of the medical services and the supply of medicine. The position of the lodges during the depression was dealt with and the cooperation of the British Medical Association with the lodges during that difficult period described. Mr. Brunell stated that since the separation of the medical services from the supply of medicine the cost of medicine to the friendly societies had greatly increased and the number of prescriptions issued to friendly society members had increased by approximately 75%. He then described the imposition of a charge of 3d. for each prescription dispensed, to be paid by the member, and the resultant decrease in the cost of supplying medicine to the friendly societies.

Mr. Dovey: Since 1926 there has been an increase in the cost of medicine amounting to 66½% per script?

A.: That is correct.

Q.: And the total cost of medicine services, having regard to the greater quantity of medicine which is now supplied, is about 200% greater than it was in 1927?

A.: Yes.

Q.: So that, summarizing the position with respect to medical services, in the metropolitan area the rate is 14s. per annum. Thus for a single man or woman or married person not desiring his partner and family to participate, the surgeon's fee is 14s. per annum. For a married person, with his partner—I take it that means his wife?

A.: Yes.

Mr. Abrahams: It means a married person and his partner.

Mr. Dovey: The married person and his partner pay for two units, namely, 28s. per annum, and the married person with partner and family pays for three units, or 42s. per annum. In some of the larger country towns the same unit is charged, but elsewhere it ranges from 16s. to 20s. per unit, and in isolated centres the amount is still further increased, according to the circumstances?

A.: That is correct.

Q.: So far as you are aware, I understand that no dissatisfaction has been expressed by lodge members as to the rates, except in certain country centres, where the unit rate demanded by the local doctor, together with heavy mileage rates, makes the contract service which is offered unattractive to the average working man?

A.: Yes.

Q.: Have you discussed with any of the members of the friendly societies the position in the future when national health insurance comes into operation; have you discussed with them what they shall do, or have they told you what they propose to do—those people who are members of lodges and who get medical benefits for themselves only, or for themselves and their wives, or for themselves and their wives and children?

A.: The friendly societies here have agreed to reduce the amount payable quarterly by the amount that we are paying for doctor and medicine. Under the present conditions there will be a reduction of 4s. 6d. per unit.

Q.: That is for the male unit?

A.: Yes.

Q.: Or the single female?

A.: Yes.

Mr. Abrahams: I do not follow that. The lodge is not going to pay anything?

A.: We are going to reduce it.

The Chairman: Let me see if I understand the position. The member, whether male or female, who comes under the insurance scheme will have to pay 1s. 6d. in the case of a man and 1s. in the case of a female to the Government to carry out the insurance scheme?

A.: Yes.

Q.: Recognizing that, do you say that, in those cases, a reduction in the amount they are now paying to the lodge is going to be made?

A.: Yes.

Q.: A reduction in the case of the male of how much?

A.: It will be 4s. 6d. If a male member's contributions at the present time amount to, say, 14s. 6d. per quarter, we would allow 4s. 6d., and his future payment would be 10s. per quarter.

Q.: And that 10s. would be paid for medical services to his wife and other dependants?

A.: No. That 10s. covers the sick pay and the funeral donation.

Q.: And so far as the other units are concerned, what is going to be done? Do you propose to try to maintain the same rates as they are now paying?

A.: Whatever is agreed, we will charge our members accordingly. At the present time we do not make any charge whatever for any of our members desiring medical attention and medicine for their wives or wives and children. The amount that we collect, in the case of a wife only, is 4s. 6d. per quarter. We pay 3s. 6d. to the doctor and 1s. to the chemist, and that 4s. 6d. is only the amount we collect from the member. We make no charge whatever over the counter. . . .

Mr. Dovey: Have any of your members, or any substantial portion of them, indicated that they will leave the lodges if national health insurance comes into force?

A.: The inquiries I have received personally seem to indicate that national insurance is going to boom the friendly societies. Some of the workers coming into the office seem as though they will decide to link up under the national insurance scheme and also be voluntary members of the societies.

Q.: For themselves?

A.: Yes. There is also an inquiry particularly in regard to providing for their wives and children.

Mr. Brunell was then cross-examined by Mr. Abrahams, who dealt with the question of the various units in the lodge system and the separation of the medical services and the supply of medicine and the consequent imposition of the dispensing fee of 3d. Mr. Abrahams then raised the question of the 4s. 6d. per quarter reduction in the lodge fee foreshadowed by Mr. Brunell.

Mr. Abrahams: I understand from what you say that you are proposing to reduce his subscription to his lodge by 4s. 6d. per annum?

A.: Four shillings and sixpence per quarter. . . .

Q.: His position then becomes this. He gets a rebate from you of 18s. per annum, and he pays £3 18s. per annum to the Commission?

A.: That is the 1s. 6d. per week.

Q.: So in the result his position becomes affected for the worse, as far as his immediate pocket is concerned, by £3 a year?

A.: Yes.

Mr. Dovey: For the worse?

The Chairman: That is so. He has less money at the end of the year. He may have other benefits.

Mr. Abrahams: That is right. [To witness]: You have expressed the view—and nobody quarrels with you for

holding your opinion—that this is going to boom the friendly societies. I want to ask you as a president, have you not heard the poorer members question their ability to pay the 1s. 6d. per week and the lodge fees?

A.: So far in the State there is so much apathy shown that we cannot really get an expression of opinion at all. At the present time I believe there are very few who have signed their official forms. They seem to be waiting until January 1, when they will be compelled to come into the scheme.

Q.: A lot of us do not know much about it?

A.: That is it. There is so much apathy, and the employees will not sign.

The Chairman: Will not sign what?

A.: The official application form for national insurance...

Mr. Abrahams: You do anticipate that some men unfortunately will be forced out of the lodges through national health insurance?

A.: Yes.

Q.: That is, I gather, because of a financial inability, in spite of any will they may have to the contrary, to continue with both?

A.: Yes, particularly the man on the basic wage.

Mr. Abrahams asked the witness to compile a statement showing the varying rates in the different districts, where arrangements were made by the branch with the medical practitioner, and Mr. Brunell agreed to do so and forward it to the Commission.

Mr. Abrahams: But, taking the thing generally, your members are satisfied?

A.: Yes.

Q.: They get a good service?

A.: Yes.

Q.: I think you mentioned that they have a sympathetic service and receive good treatment?

A.: Yes.

Q.: When they are in trouble, as they were in the depression, they were met by the medical profession?

A.: Yes.

Q.: There is no doubt the medical profession and the friendly societies in this State get on very well?

A.: That is so.

After some further questioning the witness withdrew.

Mr. Dovey: That is all the evidence that the friendly societies had available to be presented to the Commission, and although we were desirous of going on further today, neither my friend nor myself has been able to get a professional gentleman who was disengaged. This is a close holiday and most of them had made arrangements long before our arrival.

The Chairman: Very well, we will adjourn until 10.30 tomorrow morning at the Supreme Court.

Thursday, October 13, 1938.

Dr. Friedrich Wilhelm Hoopman, of Nuriootpa, was examined by Mr. Gain. He described Nuriootpa as a country town about 46 miles north-east of Adelaide, in a district famed for its production of brandy and wine. Dr. Hoopman gave evidence of a confidential nature as to his practice generally, his lodge practice and the figures in reply to the *questionnaire* sent to him. He then described the condition of the roads and conditions generally in his district. He estimated that 13% of his private patients would in the future come under national insurance. He was cross-examined on this estimate by Mr. Dovey.

Dr. Hoopman was then cross-examined at some length by Mr. Dovey as to the comparative value of excluded and included services. He stated in conclusion that the excluded services in his practice were more valuable to him than the included services.

Dr. David McDonald Steele, of Koorlinga, a country town 100 miles north of Adelaide, was examined by Mr. Abrahams. He described the district as agricultural and pastoral. Dr. Steele gave evidence as to confidential

matters, including details as to the relative values of excluded and included services and the effect of mileage upon such values. Dr. Steele gave 26% as his estimated loss of private patients who would come under national insurance.

Dr. Steele was questioned regarding mileage. He stated that he feared he would be needlessly and frequently called out by patients who would be under national insurance, and gave details as to distances and his present mileage fees.

Mr. Abrahams: I understand you wish to say something about one or two matters, particularly about the necessity for keeping up to date?

A.: Yes. I feel quite certain that unless the fee paid to doctors under the national health insurance is recognized by them as being a good fee, there will undoubtedly be a deterioration of standard. The advance in all specialized branches is steady and the general practitioner has to keep in close touch with it, and it is very difficult for him to do. He must feel very well satisfied indeed with the service if he is going to continue to be as diligent as he has been in the past.

Q.: I understand you have some views on another matter?

A.: Yes. I have felt it has not been recognized or emphasized that undoubtedly under national health insurance the doctors will, in effect, be part-time Federal servants, and I think insufficient recognition has been given to the fact that they are called upon to give services to the Commonwealth. An effort is being made apparently and insufficient attention has been given to the fact that we are called upon to do a great service to the Commonwealth, and the Commonwealth should recognize it. It will depend upon our efforts whether sickness and disablement benefit is minimized, as to whether there is a limitation to interference with industries, and I say emphatically the service is really a service to the people of the Commonwealth, and the people of the Commonwealth should pay something directly towards it.

Mr. Dovey: I suppose you appreciate that service under the national health insurance would be quite voluntary on the part of the medical profession?

A.: Yes.

Q.: I suppose you also appreciate that under the scheme set out in the Act, the Commonwealth and the people of the Commonwealth are contributing not only indirectly but directly to the cost of that medical service?

A.: I should like to have that explained to me; I do not see it.

Q.: You do not appreciate that?

A.: No, I do not.

The Chairman: Well, it is a fact.

After further cross-examination by Mr. Dovey on these points, Dr. Steele was asked by Mr. Dovey: Dealing with the lodge patients, how did you arrive at the figure of 1-5 dependants for the adults?

A.: With the help of the lodge secretaries, I went through the adult list, both male and female, very carefully, and with the very close knowledge between us of the individual families we arrived at that figure of 1-5.

Dr. Steele was then questioned as to how he arrived at this figure, and also as to the manner in which he arrived at his estimate of a 26% loss of private patients to national insurance.

Dr. Percival Thomas Spower Cherry, of Port Adelaide, was examined by Mr. Gain. Dr. Cherry described Port Adelaide as a highly industrialized area, and stated that he had a very large shipping practice, particularly dealing with injured seamen, and that he was concerned as to the effect on those seamen of the interpretation of the *National Health Insurance Act* in conjunction with the *Navigation Act*.

Dr. Cherry gave evidence on confidential matters, and was then asked by Mr. Gain: You wish to say something about what, in your opinion, will be the effect of national health insurance on the type of patient you will get, as compared with the person who is at present a contract patient?

A.: Under the lodge contract I have picked lives.

Q.: Tell the Commission your view on that?

A.: At present I examine a lodge patient for admission, and then I examine the wives and children seeking treatment as dependants.

Q.: Do you know how they compare with the average type of person who will be coming into your practice under national health insurance?

A.: Naturally they are a healthier lot, because they are only accepted as first-class lives.

Dr. Cherry, questioned by Mr. Bowie Wilson, explained that he did not mean first-class lives in the insurance sense. He was cross-examined generally upon his statement and as to his practice in examining prospective lodge patients and their families.

The Chairman: Does it not come to this: there is an examination of persons who are proposing to receive medical benefit as lodge members. There is no such examination in respect of the mass of those who will come under the national health insurance, and because of that you infer that the average level of health under the national health insurance will not be as good as the average of your lodge patients?

A.: Yes.

Mr. Wilson: If you see a person coming in and you do not like the look of him and he has a disease, you can refuse to take him under the national health insurance.

Mr. Gain: That is a matter of law, and I object to the question.

Mr. Wilson: If a man comes to you and asks if he can come on your list, you have the right of refusing?

A.: Yes.

Q.: So that you could refuse a man under the national health insurance if you thought he did not look healthy, or knew something about him?

A.: No. As I understand the Act, a man may come to me and I do not want him and I reject him. There may be ten practitioners in my district and the ten reject him, but the Commission might say "He has to go on somebody's list", and he comes on my list ultimately and I cannot reject him.

Q.: You get a proportion of those?

A.: Yes, but not under the lodge.

Q.: You think there is sufficient of those to make a difference?

A.: Yes.

After further cross-examination, largely upon confidential matters, Dr. Cherry withdrew.

Dr. Alfred Francis Stokes, of Glenelg, about seven miles south-west of Adelaide, was examined by Mr. Abrahams. Dr. Stokes was first examined on confidential matters. He estimated that 26% would be his loss in private practice under national insurance. Dr. Stokes was then cross-examined by Mr. Dovey and was asked: Is it not a fact that in this State the profession is troubled, not so much by the proposed capitation rates as by the fear that if they register as insurance practitioners they will not be allowed to do for insured patients any work which is excluded from the services in the contract. Is that not one of the matters troubling the profession in this State?

A.: Not as far as I know.

Dr. Stokes was then questioned as to how he arrived at his estimate of 26% and as to confidential matters.

He was examined by Dr. Mulvey as to the relative scope of service under his form of agreement and that suggested by national health insurance.

Dr. Mulvey: You have yourself specially studied and compared the two schemes, have not you?

A.: Yes.

Q.: Can you see any difference between the two that would merit further consideration?

A.: My objection to the Government's proposals is that I think all operations which are done with the administration of a local anaesthetic should be paid for. I understand that the Government proposes that where a local anaesthetic is used, there should be no payment.

Q.: Provided it is an operation of a minor nature?

A.: Yes. Many fractures are now set under local anaesthesia, and I think that one should be entitled to charge for them.

Q.: You do not charge for them under your form of agreement?

A.: Yes, we can, because we are using a local anaesthetic. If you have a Colles's fracture of the wrist, and you set that fracture under local anaesthesia, you are entitled to charge, because you are using a local anaesthetic.

Mr. Abrahams: Would that be so under the national health insurance scope?

Dr. Mulvey: Under the national health insurance scope that would be excluded, as I understand from the Commission.

The Witness: I have always understood that that would be an excluded service.

Dr. Neville Pickernell Wilson, of Gawler, which is about twenty-five miles north of Adelaide, was examined by Mr. Gain. Gawler was described as a country town with agricultural, wheat and wool country surrounding it. Dr. Wilson gave evidence on confidential matters. He estimated that services to private patients would diminish by about 18% as a result of national insurance.

Dr. Wilson stated that he had had experience of panel practice in England, and gave an account of a panel practice near Newcastle-on-Tyne. He was cross-examined by Mr. Dovey on this aspect and also as to confidential matters and then withdrew.

At 4.30 p.m. the Commission adjourned until Friday, October 14, 1938, at 10.30 a.m.

Correspondence.

THE INCIDENCE OF PNEUMOCOCCAL TYPES IN PNEUMONIA.

SIR: Attention was recently drawn in a leading article in this journal to the importance of determining the incidence in Australia of the various pneumococcal types in pneumonia. I may state that typing of the pneumococcus by the Neufeld and agglutination methods has been carried out on all cases of pneumonia admitted to the Royal Melbourne Hospital since April, 1936.

During the present year typing into Cooper's thirty-two types has been done and the following identified: I, II, III, IV, V, VI, VII, VIII, X, XII, XIII, XIV, XVI, XVII, XIX, XX, XXII, XXIV, XXX, XXXI.

A report dealing with the subject will be submitted at a later date.

I shall be pleased to identify the type of the infecting pneumococcus in cases of pneumonia, occurring in Victoria, if a suitable specimen of sputum is forwarded to me.

Yours, etc.,

HILDA J. GARDNER,
Clinical Pathologist and Bacteriologist
to the Royal Melbourne Hospital.

The Walter and Eliza Hall Institute of
Research in Pathology and Medicine,
Melbourne Hospital.

August 15, 1938.

Obituary.

JOHN COLMAN WOODS.

We regret to announce the death of Dr. John Colman Woods, which occurred on October 11, 1938, at Sydney, New South Wales.

BERKELEY SUNTER MUECKE.

We regret to announce the death of Dr. Berkeley Sunter Muecke, which occurred on October 8, 1938, at Adelaide, South Australia.

VINCENT GREGORY WALSH.

We regret to announce the death of Dr. Vincent Gregory Walsh, which occurred on October 14, 1938, at sea.

Corrigendum.

A MISTAKE in spelling has occurred in the issue of October 15, 1938. At page 658, under the caption "Post-Graduate Work", for "Dr. E. A. Brierley" read "Dr. E. A. Brearley".

Books Received.

THE FUNCTIONS OF HUMAN VOLUNTARY MUSCLES, by N. D. Royle, M.D., Ch.M., F.R.A.C.S.; 1938. Australia: Angus and Robertson Limited. Demy 8vo, pp. 42, with illustrations. Price: 3s. 6d. net.

ESSENTIALS OF SHORT WAVE THERAPY, by K. R. Speeding, M.B., B.S., Diploma of Radiology (Edinburgh), with a foreword by M. Crivelli, B.A., B.Sc., M.D., Ch.B.; 1938. Melbourne: W. Ramsay (Surgical) Proprietary Limited. Demy 8vo, pp. 119, with illustrations.

NOTES FROM A BACKBLOCK HOSPITAL, by G. M. Smith; 1938. Christchurch: The Caxton Press. Demy 8vo, pp. 203.

Diary for the Month.

- Oct. 25.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 Oct. 25.—Queensland Branch, B.M.A.: Council.
 Oct. 26.—Victorian Branch, B.M.A.: Council.
 Oct. 27.—South Australian Branch, B.M.A.: Branch.
 Oct. 27.—New South Wales Branch, B.M.A.: Branch.
 Nov. 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 Nov. 2.—Western Australian Branch, B.M.A.: Council.
 Nov. 3.—South Australian Branch, B.M.A.: Council.
 Nov. 4.—Queensland Branch, B.M.A.: Branch.
 Nov. 5.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 Nov. 9.—Victorian Branch, B.M.A.: Branch.
 Nov. 11.—Queensland Branch, B.M.A.: Council.
 Nov. 15.—New South Wales Branch, B.M.A.: Ethics Committee.
 Nov. 16.—Western Australian Branch, B.M.A.: Branch.
 Nov. 17.—New South Wales Branch, B.M.A.: Clinical Meeting.
 Nov. 22.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 Nov. 23.—Victorian Branch, B.M.A.: Council.
 Nov. 24.—New South Wales Branch, B.M.A.: Branch.
 Nov. 24.—South Australian Branch, B.M.A.: Branch.
 Nov. 25.—Queensland Branch, B.M.A.: Council.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xviii to xx.

AUSTIN HOSPITAL FOR CANCER AND CHRONIC DISEASES, HEIDELBERG, VICTORIA: HONORARY EAR, NOSE AND THROAT Surgeon.

CHILDREN'S HOSPITAL (INCORPORATED), PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officers.

FREMANTLE HOSPITAL, FREMANTLE, WESTERN AUSTRALIA: Junior Resident Medical Officer.

GRESSWELL SANATORIUM, MONT PARK, VICTORIA: Resident Medical Officer.

MATER MISERICORDIE PUBLIC HOSPITALS, BRISBANE, QUEENSLAND: Resident Medical Officers.

NEWCASTLE HOSPITAL, NEWCASTLE, NEW SOUTH WALES: Resident Medical Officer.

QUEEN'S MEMORIAL INFECTIOUS DISEASES HOSPITAL, FAIRFIELD, VICTORIA: Consultant Surgeon.

THE HORNSBY AND DISTRICT HOSPITAL, HORNSBY, NEW SOUTH WALES: Honorary Surgeon.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. House, 125, Wickham Terrace, Brisbane, B.17.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 173, North Terrace, Adelaide.	All Lodge appointments in South Australia. All contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.

Editorial Notices.

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